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Ophtalmographia - o tratado sobre o olho

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8-7

Ophthalmographia;

OR, A

TREATISE

OF THE

EYE.



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Oftalmografia: ó Tratado del ojo: en dos p.tes

La 1.a contiene la anatomia y exacta descripcion del ojo, como la teoria de la vision considerada con sus enfermedades.

La 2.a contiene las señales, causas y curacion de sus enfermedades.

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Ophthalmographia;

OR, A

TREATISE

OF THE

EYE;

BIBLIOTECA CENTRAL
LA FACULTAD DE MEDICINA

In TWO PARTS.

Part I. Containing a New and Exact Description of the EYE; as also the Theory of the Vision considered, with its Diseases.

Part II. Containing the Signs, Causes, and Cure of the Maladies incident to the EYE.

To which is added

An APPENDIX of some of the Diseases of the *EAR*; wherein is observed the Communication between these Two Organs. by Peter Kennedy

LONDON:

Printed for BERNARD LINTOTT, at the *Cross-Keys* between the Two *Temple-Gates* in *Fleet-Street*. MDCCXIII.

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TO THE

Very Learned and Ingenious

John Arbuthnott,

Doctor of Phyſick,

Phyſician in Ordinary to Her Majeſty, as alſo of Chelſea-*Hoſpital, Fellow of the College of Phyſicians, and of the Royal Society.*

SIR,

AFTER having writ this ſmall OPHTHALMOGRAPHIA, I thought to have laid it aſide, or kept it for my

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my own private uſe, without publiſhing it to the World; as a Subject not much Studied, and perhaps for this Reaſon undervalued, becauſe it is moſtly pretended to by ignorant People, to the ſad Misfortune of ſuch as labour under Diſeaſes of the Eyes.

Nevertheleſs the more knowing World muſt allow it to be one of the moſt curious Branches of Philoſophy, Phyſick and Surgery.

But ſince You were pleaſed to read it over in Manuſcript, and adviſed and encouraged

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couraged me in the Printing of it, I now put it under Your Protection, ſince Your greateſt Enemies cannot deny You to be a good Judge.

Yet if this little Treatiſe ſhould not be ſo acceptable among the Learned, I wiſh it may at leaſt have the good Effect of making them write a better or more uſeful one of their own.

I ſhall not, however, be ſo vain as to think there are no Errors ſlipt in; yet I hope You will be ſo good as to ex-

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cuſe them, and that others will take your Example.

If I ſhould ſtuff this *Dedication* with vain Praiſes and Flatteries, ſo common now a-days, it wou'd, I am perſuaded, very much offend your Modeſty; or to ſay any thing of your Character, Knowledge and Learning, were as unneceſſary, eſpecially ſince they are ſo well known and diſtinguiſhed by the Queen and Beſt of the Nation.

But I hope You will accept of this as a Demonſtration of the Eſteem and Reſpect

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DEDICATION.

I owe You, and as a ſmall Token of Gratitude, or Acknowledgment for the Favour and Civility You have been pleaſed to ſhew to,

SIR,

Your moſt Humble and

Moſt Obedient Servant,

PETER KENNEDY.

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THE PREFACE

THE Reaſons for my undertaking to write ſomething on this Subject, was partly from the Experience I had from other Patients as well as my ſelf, who to my Sorrow was troubled with ſore Eyes for many Years, during my Childhood and upwards, which was a great hindrance to my Studies. And although now, thank God, they are well, yet ſtill but weakly; the beſt Remedy for that, being a careful Uſage.

This is a Misfortune that has attended ſome of the beſt of Writers upon particular Subjects, (although that is a Character I cannot pretend to)

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to) ſuch as *Morton* and *Floyer*, upon *Conſumption* and *Aſthma*; the firſt of thoſe died of the ſame Diſtemper, and the ſecond ſtill remains *Aſthmatick*. Nor I think ought a Man be thought leſs capable in other Parts, or Branches, becauſe he writes Particularly upon one.

The next thing I conſider'd was, that we had not as yet any thing tollerable on the Subject in the *Engliſh* Tongue, and for that Reaſon hope it may be of ſome Uſe.

The Reader will find a great many new Things in the Deſcription of the Eye, as likewiſe in the Theory of Viſion, conſider'd with ſome of its Diſeaſes, alſo in the Method of Cures, with many Obſervations in my own Practice, not at all taken notice of by *Galen*, *Plempius*, *Briggs*, *Maitre-jean*, *Briſceau*, or any other *Latin*, *French*, or *Italian* Author.

The

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The *Appendix* of the Communications of ſome Diſeaſes betwixt the Eye and Ear, I think is entirely New.

The Method then I have taken in this little Treatiſe is, Firſt to deſcribe the external Parts of the Eye, and next its *Tunics* with their Veſſels; alſo ſome Diviſions and Obſervations on the Coats, *Ligamentum Ciliare*, and *Membranes*, made by different Modern Anatomiſts as well as my ſelf, ſuch as the famous Mr. *Ruyſh*, and *Row*, at *Amſterdam*, or *Maitre-jean* at *Paris*.

After which, I treat of the different Humours, the Aqueous, Chriſtaline and Vitrious; where I ſhew that the Aqueous ſeems to come from the Vitrious, and that the latter, which has hitherto been taken for a Congealed ſort of Humour, is nothing elſe but a Combination or Number of little Veſicles full of Water, or the Aqueous Humour.

And

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And next of the Theory of Vision, which I apply and consider with some Diseases, such as *Myopia*, *Presbitia*, *Gutta Serena*, and Cataracts.

In the second Part, I treat of the Signs, Causes, and Cure of the Maladies incident to the Eye.

Lastly, the Diseases of the Ear, in which I observe the immediate Communications of some Diseases betwixt those Two Organs of Sight and Hearing.

The Copper Plate of the Anatomy of the Eye, is rather to Demonstrate the common Parts than the most Minute, such as the Division of the *Choroïdes*, or *Vesicles* of the Vitrious; circular *Tubes* or *Fibres* of the Christaline or *Sinus* in the *Ligamentum Ciliare*, &c.

The Plate of Vision shews it self how Objects are represented to the Eye, or imprinted upon the *Retina*.

If

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The Preface.

If the Stile or Language ſhould not pleaſe, I hope it will be the more excuſable, if conſidered, that I have been Abroad moſt part of my Time in Foreign Countries.

ERRATA.

PAGE 12. Line 4. for *cicatrix* read *cicatriſe*. P. 44. l. 14. for *Sacchrum* r. *Saccharum*. P. 49. l. 13. for *Euphraq.* r. *Euphrag.* P. 66. l. 16. for *or an Apple* r. *an Apple*. l. 18. for *Mouſe* r. *Flye*.

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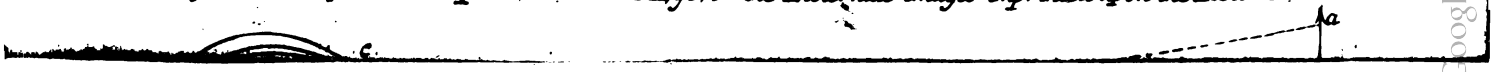
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Figure how Objects are represented to the Eye, or the Externall images imprinted upon the Retina.



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Ophthalmographia:

OR, A TREATISE OF THE EYE.



PART I.

CHAP. I.

Containing a Deſcription of the Muſcles, and ſome of its external Parts.

SINCE the Eye has been ſo often deſcribed by different Anatomiſts, I ſhall be the more brief on the Parts ſo commonly known, and ſhall more particularly take Notice of what is not in other Authors.

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The Palpebræ and their Muſcles.

The firſt Parts, then, of this Organ, are the Eye-brows, or a parcel of Hairs, planted there in order. The next are the *Palpebræ*, or Eye-lids: Then the Corrugator Muſcles, whoſe Origins are in the great *Canthus* of the Eye, and terminate in the middle of the Eye-brow; as likewiſe the Orbicular Muſcles which come from the ſame *Canthus*, and their Fibres running along the Eye-lids, inſert themſelves together into the leſſer, although ſome call it but one Muſcle that goes round from the great *Canthus*, and comes back to be inſerted in the ſame place. Theſe, I believe, may contribute, with the Contraction of the Pupil, to hinder ſo many Rays going in when Light is too ſtrong; that is, the Hairs, with the Contraction of theſe Muſcles, hinder and obſtruct a great many of the Rays falling upon the *Cornea*.

Beſides theſe, there is the *Muſculus rectus*, which riſes from the bottom of the Orbit, where the Optick Nerve enters, and its Tendon is inſerted into the Border of the Eye-lid, which ſerves to draw it upwards; in a word, the *Cutis*, *Cuticula*, Fibres of the Orbicular Muſcle and *Tunica conjunctiva* form the ſaid Eye-lids, the latter *Tunica* is continued from the Globe to line its Inſide.

Round

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Round their Edges are so many small Cartilages, called the *Cilia*, under which there opens the Mouths of the excretory Ducts of some small Glands which are ranged there, and separate a sort of Wax that gum or fasten the Eyes when asleep. These Hairs defend the Eyes from Dust, Flies and too much Light. *The* Cilia.

Some will have the *Tunica conjunctiva* only to be a Production of the Skin, but others, to which Opinion I mostly incline, take it to be a Production of the *Pericranium*. It adheres to the Edges of the Orbit, lines the Eye-lids, and covers the fore part of the Globe, that is not only the White of the Eye, but seems to me likewise to cover the *Cornea*, although there of a delicate fine transparent Texture, not so easily to be observed as in common *Opthalmia's*, where its small Blood Vessels become more turgid and apparent. This Membrane, as most others, may be divided into two or three; so that one part is by some named *conjunctiva*, the other *innominata*. In treating of *Opthalmia*, I have taken notice of the great Sympathy or Communication that is betwixt the Eye and Ear, in violent Inflammations of this Membrane. *The* Tunica conjunctiva.

The *Glandula lachrimalis* is situated upon the upper part of the Globe of the Eye, and commonly is divided into several Lobes, *The* Glandula lachrimalis.

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though ſometimes in one, varying much in its Figure. It is a Gland very large, and lying upon the Globe, on the Backſide of the *Tunica conjunctiva* extends it ſelf almoſt from the upper part of the leſſer *Canthus* to the greater; it ſends out ſeveral ſmall excretory Ducts, which pierce the foreſaid *Tunica*, near the *Cilia*, and out of which the Tears are ſent to moiſten the external part of the Globe of the Eye. This Gland by ſome is called the *Glandula lachrimalis ſuperior*, and is properly the lachrymal Gland, that ſends thoſe Tears to the Eye; which being fully moiſtened, the ſuperfluous run down to the two *Puncta* in the great *Canthus*, called *Puncta lachrimalia*, betwixt which lies the *Caruncula lachrimalis*, formerly called *the Gland*, and by ſome the *Glandula inferior*. It ſeems to be a Continuation or gathering together of the inner Membrane of the Eye-lids.

The Sacculus lachrimalis. Under this lies the *Sacculus lacrimalis*, placed upon the *Os unguis* or *lachrimalis*; it receives the Tears from the two *puncta* in its upper part, and ſends them thro' the Duct, which is continued from its bottom thro' the hole of the *Os lacrimale*, and comes out under the External *Lamina* of the *Os ſpongioſum*, to moiſten the inner Membrane of the Noſe. This *Sacculus*, or little Bag, ſeems to be a Continuation or Extenſion of the inner Membrane of the Noſe: So that

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that it is glandulous as well as that Membrane. In this great *Canthus* of the Eye is form'd the Tumour call'd *Ægylops*, and its Matter degenerating, makes that we call the *Fistula lachrimalis*. The tumifaction of the Lachrimal Bag hinders the Tears from going the right way into the Nose; so that they come to run down the Cheeks, in which case there is necessity of Manual Operation, by making a large Incision upon the Tumour; nor is there such great danger of cutting the Orbicular Muscle, as is commonly suppos'd, although most safe to cut according to the direction of its Fibres, after which some make use of actual Cauterie to bring away the *Os unguis*; others pierce and break entirely through it, so that the Tears may have Passage that way, for it cannot exfoliate as other Bones do, by reason of its having only one *Lamina*, so that the whole Bone comes out if burn'd, and if broke comes in pieces by the Nose, since the Wound in the *Canthus*, in that case, is healed up as soon as possible.

Of the Muscles of the Eye.

The Globe of the Eye is moved by six different Muscles, four of which move it streightways, and two obliquely. The *Superbus* or *Attollens*, is the first of the four streight Muscles, lies on the upper part of the Globe, and draws it upwards. The second is its Antagonist, call'd the *Humilis*:

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This being inserted below, draws it downwards. The *Adductor* is the third, draws it to the Nose; and the fourth, the *Abductor*, draws it from the Nose. These four Muscles are round and fleshy belly'd; they all take their Origines round the Hole through which the Optick Nerve enters in the bottom of the Orbit, and running along the Globe directly opposite one to another, terminate in four large broad Tendons, or rather join altogether, making a sort of an *Aponeurosis*, which runs betwixt the *Sclerotica* and *Conjunctiva*, to which it adheres, inserting itself round the *Cornea*. These Muscles acting equally all together, draw the Globe in towards the bottom of the Orbit.

The fifth, or *Obliquus major*, rises from the bottom of the Orbit near the *Adductor*, and goes directly towards the great *Canthus*, where growing to a round Tendon, passes through a little Cartilaginous Ring, which serves as a Pulley, and from that going backwards, is inserted in the upper part of the Globe near the *Superbus*, a little towards the lesser *Canthus*.

The *Obliquus minor* is the sixth, it arises from the inferior and almost external part of the Orbit towards the great Angle, and ascending obliquely towards the outward Angle of the Eye, is inserted in the external and upper part of the Globe, uni-

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uniting its Tendon with the *Obliquus major* to the Circumference of the *Cornea*. The firſt ſerves to draw it forwards, and turn its Pupil downwards. The ſecond draws it forwards and upwards, and acting together, draw the Globe fixedly to the Noſe. All theſe Muſcles acting differently, keep the Eye in a continual Motion.

Of the Nerves and Blood-Veſſels.

The external parts of the Eye are furniſh'd with three pair of Nerves, the firſt of which are the *Oculorum Motores*; their Origin is in the *Medulla oblongata*, by the *infundibulum* paſſing by the *Carotides*, enter the Orbit at the *Foramina lacera*, the greateſt part of which is ſpent upon the *Attollens*, *Deprimens* and *Obliquus minor*, and its ſmaller branch joins with the *Ramus Opthalmicus* of the fifth pair, and makes up that called the *Plexus opthalmicus*, which is ſpent partly upon the Tunicles, and ſome part on the Muſcles of the Eye-lids. Next thoſe are the *Par patheticum*, or fourth pair, which ariſe behind the *Teſtes*, and paſſing along the ſides of the *Sella turcica*, likewiſe enter the Orbit by the *Foramina lacera*, and is wholly diſtributed in the Muſcle *Obliquus major* of the Eye. This is call'd *Pathetick*, becauſe it is ſaid to be the occaſion of the ſaid Muſcle's ſhewing involuntary Motions in the different Paſſions or Perturbations of the Mind, ſuch as Love and Hatred.

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The third is the *Ramus opthalmicus*, which is a Branch of the fifth pair of Nerves, ariſing from the ſide and forepart of the *Proceſſus annularis* of the Brain.

I ſhall not ſo particularly take notice of the other Branches of the fifth pair, only in general, that they are ſpread in the Jaws, Teeth, Muſcles of the Cheek, *Crotaphites*, Muſcles of the *Pharinx*, Tongue, Muſcles of the Tongue, *Glandula ſublingualis*, and Chin. Theſe likewiſe have a ſmall Branch which comes to form the *Chorda Tympani*; as likewiſe a Branch which joins the *Portio dura* on the Jaw. Theſe Diſtributions I take a little notice of, becauſe of the Sympathy thoſe Parts ſometimes may have with the Diſeaſes of the Eyes; the principal Branch, however, we are to take notice of, is, as I have ſaid, the *Ramus opthalmicus*, which enters the Orbit by the ſame hole as the others, forming the *Plexus opthalmicus* with the *Motorii*, part of which is ſpent on the *Glandula lacrimalis* and *Sclerotica*, the reſt goes by different Branches to the frontal Muſcles and internal Noſe.

The principal Branch of the ſixth pair likewiſe enters the *Foramina lacera*, and is ſpent on the *Abductor* Muſcle, the other Branch makes that called the Intercoſtal Nerve. The Arterial Blood is brought by Branches from the *Carotides*, one Branch is

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is ſent by the external *Carotide* to the Muſcles of the Eye-lid, and the internal *Carotide* being enter'd the Skull, ſends a Branch which runs along with the Optick Nerve for the Diſtribution of the whole Eye, and the Veins return the Blood to the internal and external Jugulars.

CHAP. II.

Containing a Deſcription of the Optick Nerves, and proper Tunics of the Globe.

THE Optick Nerves are called the ſecond pair of the Brain, and are bigger than any elſe. They take their Origin from the ſuperior parts of thoſe two round Bodies called the *Thalami Nervorum Opticorum*, and from the Extremities of the *Corpora ſtriata*.

I would not too forwardly pretend to tell the Uſes of thoſe different parts of the Brain; but I think it ſeems probable all thoſe Bodies, ſuch as the *Thalami*, &c. from whence the Nerves take their Origin, may be ſo many different Glands for ſecerning what's proper for them, or the parts the ſaid Glands convey to.

Thus leaving the Brain, they unite above the *Sella Turcica*, and immediately again ſeparating, they paſs betwixt the two Carodital

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rodital Arteries, and enter in at the Orbit by their own proper Holes, being the foremoſt of the *Os ſphænoïdes*, after which entering the Globe they ſpread their Medullary Fibres upon the Vitrious Humour, and is that which is call'd the *Retina*.

This Nerve in Men enters near the middle of the backſide of the Globe; but in *Quadrupedes*, it enters more obliquely, or on one ſide; before it comes out of the Skull, it takes its external Coat from the *Dura mater*, the which, when in the Orbit, makes up that Tunic of the Eye called *Sclerotica*, and its forepart *Cornea*, as ſome or moſt Anatomiſts think.

The *Sclerotica* is a hard, thick and Opack Membrane, and ſcarce to be divided as other Membranes, becauſe of the many Fibres which run croſs or tranſverſly in it.

The *Cornea* is commonly call'd another Coat, although it is nothing elſe but a continuation of the former, only that it's clear and tranſparent. It lies in the forepart of the Globe, and it is through this that the Rays of Light do paſs. This ſeems to divide more eaſily into different *Laminæ*, it takes the Name, becauſe it is like to Horn, and round it is that commonly call'd the White of the Eye. It is much about the bigneſs of a Silver *Engliſh* Two-

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Twopence, or four Lines in Diameter, and although it is ſo very tranſparent, yet it has many Blood Veſſels for its Nouriſhment, and when thoſe come to be obſtructed is render'd Opack, ſo that the Rays of Light cannot paſs as they did before; thoſe Veſſels come from that Ramification of the *Carotides* which accompanies the Optick Nerve, and diſtributes it ſelf firſt into the *Sclerotica*, and through the *Cornea* it alſo caſts off a Branch which paſſes into the *Choroïdes*, *Ligamentum ciliare* and *Retina*. The Nerves are from the Opthalmick Branch of the fifth pair, and are diſtributed there, and in the internal Tunics. The Blood is brought back from thence by the Veins to the Jugulars.

The *Cornea* is much more Convex than the reſt of the Globe of the Eye; and in ſome Birds, and other Creatures, much more Convex than in Men, and in ſome others leſs, and this Difference contributes to make the Object appear bigger or leſſer, the *Sclerotica* and *Cornea* form the Globe of the Eye, although it be not perfectly Spherical; the *Cornea* is a Section of a much leſſer Sphere than the *Sclerotica*, and conſequently more Convex, and this Section is truly Spherical.

The *Cornea* is much more ſenſible to the Touch than the White of the Eye, and Wounds

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Wounds here are very dangerous to the Sight; for the Humours, or fluids Stopping, commonly render it Opack altogether, but at beſt the Cicatrix of a Wound, or Small Pock, will always remain; ſo that thoſe Rays muſt be loſt. Although they may ſee a little by the reſt of the *Cornea* if it keeps tranſparent, which is but ſeldom.

CHAP. III.

Of the Tunica Choroïdes, Ligamentum Ciliare, Uvea *and* Iris.

THIS Coat, or Membrane, *Choroïdes*, is immediately next to the *Sclerotica*, it is commonly thought to be a Production of the *Pia mater*, becauſe it is next, and round the Optick Nerve.

The *Slerotica* is on its outſide, and the *Retina* lies on its inſide, whoſe Medullary Fibres it embraces with the Vitrious Humour, as far as the *Ligamentum ciliare*, after which it takes the Name of *Uvea* and *Iris*. This Membrane is ting'd black, by reaſon of ſome Glands that ſeparate a black Juice to give it that Colour, being waſh'd in Water it becomes white. Its dark Colour ſeems neceſſary behind the *Retina* which is white, to make leſs Confuſion when Objects are painted there. Mr. *Ruyſh* divides

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divides it in two, and calls the outer one *Choroïdes*, and the inner *Tunica Ruyſhiana*. However (as I ſaid before) moſt ſoft Membranes may be divided in ſeveral; its Blood Veſſels is from the Branch that comes in with the Optick Nerve to the *Sclerotica*, from which they are numerouſly ſpread upon this Membrane.

The *Uvea* is a continuation or joining with this and the *Ligamentum ciliare*, it is compos'd of ſtreight and circular Fibres, for the Contraction and Dilatation of the round Hole in its middle call'd *Pupil*, when the Rays of Light which enter there are either too many or too few; its ſtreight Fibres which dilate it, come from the joining with the *Ligamentum ciliare*, and go as far as the *Pupil*, where they make a ſort of Border; the others which contract it are circular, but come not quite to the edge of the *Pupil*, ſo that the *Uvea* is very thin and tender there, and care ſhould be had in Couching not to touch it, ſince very eaſily wounded, and in that caſe the *Pupil* loſes its form. This once happen'd to my ſelf, although the Patient continued to ſee after the Operation, and that the Cataract was beat down, yet 'tis very probable had not this Accident happen'd, ſhe might have ſeen better. This was the firſt I couched, and the ſecond time I had paſſed in the Needle, becauſe the Cataract wou'd not

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not remain down ; and having punctured another part the Humour Aqueous came out by the firſt Orifice, ſo that the *Uvea* and parts within had not that full Tenſity juſt then as before. In a Day or two's time it recovers the Aqueous Humour as at firſt. This Patient nevertheleſs ſaw better than Expectation.

The outſide of the *Uvea* is called *Iris*, becauſe it is of different Colours, and the Eyes are called Blue, Yellow, Grey or Black, according as the *Iris* is, or the moſt of ſome one or other of theſe Colours. Some think that according to the predominant Humour of the Body and Brain the *Iris* has its Colour, and certainly ſomething may be judged, I think, of the briskneſs, ſlowneſs, or languidneſs of the Temperament, according to the different Colours of the Eyes.

The *Ligamentum ciliare* ariſes from a little circular Proceſs or Coronet, which makes a Partition to the *Choroides* and *Uvea*; it likewiſe adheres with its Circle where the *Opaque Sclerotica* and tranſparent *Cornea* meet; from hence it forms a delicate Membrane, which runs upon the outſide of the Glaſſie Humour, or from the Circumference to the Center, that is from this Coronet to the Cryſtalline.

This Membrane is full of Arteries, Veins and Nerves. Mr. *Row*, Profeſſor

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of Anatomy at *Amsterdam*, shews a *Sinus* here in the Eye of a Cod-fish, which runs circularly round its edges, and in which there is a thin Serous Blood contained: The Opinions of the use of this Ligament are different; some think it contracts, and by that means makes the Chrystalline to advance, and the *Retina* to retire back, in order to lengthen the *Axis* of Vision when Objects are too near; others only consider it as a Ligament to keep the Chrystalline fast in its place, which no doubt is part of its use; but it certainly has another, for the many Blood Vessels which are in it, and the *Sinus* observed by Mr. *Row*. Nor, I think, can the Vitrious and Chrystalline Humours, with their Coats, be nourish'd from any other Vessels but these, since continu'd, or adhering to no other Membrane but this. It is likewise observable, that it has many black Ducts or Channels, which run from the Circumference to the Chrystalline, full of that black Liquor of the *Uvea*, and may be squeezed out.

CHAP. IV.

Of the RETINA.

AS I have said before, the Medullary Fibres of the Optic Nerve enter the Globe, and there form this Net, or *Retina*;

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tina; it is of a very delicate Texture, eſpecially in young Creatures; it immediately embraces the Vitrious Humour, and ſeems to adhere to the little Circular Proceſs, or where the *Ligamentum ciliare* riſes. Its Blood Veſſels come from that Branch which accompanies the Optic Nerve, and peirces the Coats *Sclerotica* and *Choroïdes*; the ſaid Blood Veſſels ſpread themſelves very numerouſly upon it. The Ingenious Doctor *Pitcairn* takes it to be the Obſtruction of the Blood Veſſels, which hinders the Impreſſion of Objects upon the *Retina*; and makes what they call *Gutta Serena*, for it is here that the Images of all Objects are painted, that is where the Rays of the External Object meet in their true Point or *Focus* (by means of the *Cornea* and Chryſtalline Humour) and imprint this External Image inverted there, of which I ſhall ſay more hereafter, in treating of Viſion in particular.

CHAP. V.

Of the Vitrious Humour.

THIS Humour takes up the greateſt part of the Eye, that is from the bottom of the Globe to the *Ligamentum ciliare*; it is Spherical behind, and in its middle before is Concave, in which the Chriſtal-

Chrystalline Humour lies; it is a very transparent Substance, not so hard as the Chrystalline, or so fluid as the Aqueous. It is commonly taken for a congeal'd sort of Humour, although it seems more probably to be nothing else but a number of delicate little Vesicles or Cellules full of Water, for in touching it is always moist and watersh; when cut, the moisture comes out more abundantly from it, or by rubbing it betwixt the Palms of your Hands the Water comes out, and will rub almost to nothing but Membrane. By observing with a Microscope when cut, you will see many little airy Bubbles to arise from it; being dried it evaporates, and that delicate Membranous Body is almost wither'd to nothing. Its use seems chiefly to keep the Chrystalline Humour at the proper distance from the *Retina*, as I shall shew in speaking of Vision. It has a delicate Membrane or Tunic, with which it is cover'd, and takes its Name from the Humour. This Membrane is adherent to the * *Ligamentum ciliare*, and no doubt has its Blood Vessels from thence; as also the little Vesicles as well as all the other Membranes of the Body, which must be nourished by Blood Vessels, altho' so delicate that they are not to be seen; yet this needs not seem strange, when we consider that those of the *Cornea* which are larger by much, are not however

* *And the* Ligamentum ciliare *from the* Choroïdes.

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ever at all to be ſeen, 'till they become turgid, and ſwell in *Opthalmia's*. Or even indeed thoſe of the *Tunica adnata* or *conjunctiva*, 'till inflamed as I have ſaid. Whether this Humour communicates with the Chryſtalline, is what I cannot determine; but it's certain, that its Membrane or Coat is not only continued or adherent to the *Ligamentum ciliare*, but likewiſe to the *Tunica aranea*, or Membrane which immediately covers the Chryſtalline Humour.

CHAP. VI.

Of the Chryſtalline Humour.

IT's called ſo from the likeneſs it has to Chryſtal, it lies in the Cavity of the middle and forepart of the Vitrious Humour. It is of a much more hard and ſolid Subſtance than the former, and is Convex on both ſides; its backſide towards the Vitrious, is much more Convex than the other; it lies immediately before the *Pupil* behind the *Uvea*, ſo that its foreſide lies in the Aqueous Humour. The *Tunica* with which it is covered is called the *Aranea*, becauſe of ſuch a very delicate Texture: This Membrane adheres to, or is continued from the Vitrious Tunic and *Ligamentum ciliare*.

Its Subſtance is commonly taken for a congeal'd ſort of Body, as the Vitrious has like-

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likewise been taken to be, but that no doubt proceeded from not examining it rightly, or rather not at all; for few are so ignorant, as not to have seen a Fish Eye boyl'd, or any other Creatures, the Chrystalline of which becomes white, and comes all off in so many different Coats or *Laminæ*.

It's however very hard positively to determine what it is, but I believe none will deny but that it must be nourished, yet whether it be made up of pelucid fine Tubes, or delicate transparent Membranes closely compacted together, or whether so many little Scales lying one on the top of another as the *Cuticula* is supposed to be, are Questions; but I think the latter seems the most probable, because of its throwing off in Coats or Skins in the manner aforesaid, nor does that Coat or Skin keep very close together, but may easily be bruised or crumbled, probably into so many different Scales. When put into hot Water a little while and not boil'd, it makes a glutinous sort of Substance, something not unlike Isinglass; and when I break and examine its middle, I find it compos'd of Circular sort of Fibres of an Icy colour, making lesser Circles as they come nearer the Center; it grows little or nothing less than before by boiling. It lies in a perfect sort of *Sacculus*, that is, its *Tunica aranea*, being continued from the Vitrious Tunick, and *Ligamentum ci-*

In the middle about its Center, it is much harder than its outside, and boiling it grows extremely hard.

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liare come closely round it, so that it lies very fixed and fast, but if you cut its Tunic on top or side, it immediately springs out; so that it seems not to be any way adherent to its Membranes, which however no doubt must send it in moisture, but whether by imbibing it, as some think, is what I cannot be positive in, but it seems to be independent, or not to adhere to any thing. Its Coat I think being something to it not unlike the *Pericardium*, only that the *Aranea* lies closely round it, yet there is certainly a little Moisture betwixt them.

CHAP. VII.

Of the Aqueous Humour.

IT lies immediately under the *Cornea* on both sides the *Uvea* or *Iris*, it fills the *Pupil*, and lies round the out or foreside of the Chrystalline and *Ligamentum ciliare*; it is not common Water, but has something Spirituous and Viscous in its Nature. There are some Anatomists of late that have pretended to shew the *Ducts* from whence it comes, but have never satisfied others about them, for my part I cou'd never see any such thing. Yet I have not any great difficulty of thinking from whence it comes, since that Water contained

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ed in the Vitrious being compared with it is the very ſame; and the quantity taken out of the Vitrious by breaking or rubbing it, as I have ſaid, will ſurpaſs the other: Nor is it, I think, very hard to conceive, that this Spirituous and ſlippery Liquor ſhou'd paſs thorough the Pores of thoſe *Veſiculæ* or Membranes that environ it, more eſpecially being continually forced upon and thruſt out, by new Supplies from the Arteries or Ducts; as likewiſe the internal Heat which helps to perſpire or evaporate theſe Fluids, into the Cavity where the Aqueous Humour is lodged. It may likewiſe be helped by the continual Motion, and ſqueeſing of the Bulbe or Globe of the Eye; and all theſe may likewiſe contribute to ſend the ſame Humour out by the *Cornea*, which we ſee plainly enough it does, when it has not its Supplies, as by cutting an Eye out, and letting it lie a Day or two; the Aqueous Humour will be moſtly evaporate, ſo that there needs no ſuppoſed holes in the Blood Veſſels to return by, as ſome think. This Humour being let out by Puncture, very ſoon returns, as I have frequently experimented, ſo that there muſt be a very conſiderable Supply.

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CHAP. VIII.

THEORY of VISION, considered with some of the Diseases of the Eye.

THUS having given a short Description of the Eye, that which seems necessary, and what I shall treat of next, is the Theory of Vision; how, and after what manner the Images of Objects are represented to us, by means of the aforesaid Organs of Sight.

I would not have the Reader expect that I am to write a whole Treatise of Opticks, but only so much as may be necessary to shew how Sight is performed.

And yet less necessary to my Purpose to philosophize on the Nature of Light, which however seems to be a subtil Fluid, that moves quick, and is continually emitted from the Sun or luminous Body: Its Motion may be observed by the Reflection on solid Bodies, and the Refraction it has in passing thorough a *Dense Medium*, such as Glass.

Light then is this *Materia subtilis* sent forth from the Sun, or lucid Body, in Lines or Rays, commonly called Sun-beams. The famous Monsieur *Romare* has calculated by the *Satellites*, that Light, or those fluid and luminous Rays, are transmitted from the Sun to us in ten Minutes time. These then coming with such an incredible Swiftness,

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neſs, meeting the Eye proper and wonderfully diſpoſed with convex and diaphonous Mediums the better to receive them, cannot but ſtrike very ſenſibly upon the fine medullary Fibres of the *Retina*. But whether it be communicated by Undulation or Vibration to the Soul, to make the Impreſſion called Light, is what I ſhan't pretend to determine.

The Eye may be conſidered as a *Camera obſcura*, or dark Chamber; that is, to ſhut the Doors and Windows of a Room, ſo as no Light come in but by a ſmall Hole in one of the Shutters: Then place a White Paper (which may be ſuppoſed to be the *Retina*) within at a convenient Diſtance from the Hole, and the Rays reflected from the external Objects without will croſs one another in the Hole, and paint the inverted Images on the Paper, though but faintly.

Thus then it would do upon the *Retina*, although there were no Humours, neither Chryſtalline, Vitrious or Aqueous, nor even the *Cornea*, if there be but a ſmall Hole, ſuch as the Pupil, for the Rays to paſs thorough, as in the *Camera obſcura*; what the *Retina* might ſuffer in that Caſe is not to our preſent Purpoſe; ſo that all theſe only contribute to the greater Perfection of Sight; of which more hereafter.

For Example: A *Lens* (which may be ſuppoſed to be the Chryſtalline behind the

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Pupil) or convex Glaſs being placed betwixt the Hole and Paper, will make the Rays converge which before were ſpread in a large and confuſed Object; that is, the oblique Rays of each Pencil of Rays, that flows from every Point of the Object, will be refracted by the Denſity of the Glaſs Medium to their proper Perpendicular; and there meeting together much nearer to one another in the *Focus*, than at their Place of Incidence, muſt conſequently imprint there a leſſer Image, though much more ſtrongly, and perfectly delineate.

If the *Lens* or Chryſtalline be too far from the Paper or *Retina*, the Rays will interſect one another before they arrive there, and afterwards come devergent upon the Paper; ſo that being again ſpread, they will make but a confuſed and faint Image or Impreſſion: If it be too near, the Rays are not as yet met in their *Focus*, and then cannot be ſo perfect; thus the Paper or *Retina* muſt be at its proper Diſtance.

Theſe are commonly given as Reaſons for the two Diſeaſes called *Myopia* and *Persbitia*; although many Obſervations and Demonſtrations might be given to the contrary, and that it proceeds only from the too much or too little Convexity of the *Cornea* and Globe of the Eye; which is remarkable in purblind People, that the *Tunica cornea* is more eminently convex than

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than in others; and the more it is ſo, the nearer they will ſee or hold the Object. The only Remedy for this Diſeaſe is the uſe of concave and meniſcous Glaſſes, which make the Rays diverge, that otherwiſe are too much converged by the too great Convexity of the *Cornea*, and better to ſee things at a diſtance; theſe ſort of Spectacles are uſed as I ſaid before.

Presbitia in old Age being the contrary, that is too little Convexity, or Flatneſs of the *Cornea* and Globe, either by Nature or decayed, are only to be helped by the contrary Remedy, the convex Spectacles ſo well known, and are to be fitted according to the Decay or Convexity of the *Cornea*. As I have ſaid then, the *Lens* or Chryſtalline is to be placed at its proper Diſtance from the Paper behind the Hole in the *Camera obſcura*, by which means the Rays are broke or refracted. The Reaſon of which is not much to my Purpoſe, whether by a proper Diſpoſition of the Pores of the Glaſs or Medium, that break the Rays as a Ball thrown into a Tube; or whether it be by Attraction, as Sir *Iſaac Newton* thinks: But that it is ſo few or none will deny, ſince it's demonſtrable by ſo many Experiments. Theſe Rays being brought then by means of this Convex to their proper *Focus*, or Place on the Paper, or *Retina*, muſt, as I have ſaid, imprint a more perfect Image.

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* *Which may be supposed to be as the* Cornea, *or as Spectacles.*

A *Convex of a larger Sphere being put a little on the Outside, will make a greater Number of Rays to converge from all Points of the external Object, so to enter in at the Hole upon the *Lens* in the Inside, and consequently make the Picture more perfect. The greater Convexity of the Glass or *Lens*, the larger the Object will appear, for the Angle of Vision will be greater, but the *Axis* of Sight, or distance from the Object, will be shortened; so that Purblind People, if they have no other defect or weakness but proceeding from the Convexity, see things better, and probably larger, than the others, yet at their own distance, which no doubt must be nearer according to the Convexity.

Thus much for the more perfect imprinting of Ideas or Objects by means of Convex Bodies.

Many Reasons have been given about the Nature of Colours, although Sir *Isaac Newton* seems to have fully cleared that Point, by many of his Experiments with Crystal and Glass Prisms, such as putting a Triangular one behind a small hole in the Shutter of a darkened Room, so that the Sun-beams or Rays fall upon it, by which means they will appear in different Colours on the other side of the Room, such as Blue, Red, Green or Yellow, by which he proves the different Nature of those Rays.

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Rays; as this is but little to my purpose, so I leave it. It may not be improper that I take Notice of the different Refractions the Rays suffer in the Eye, which is first in the *Cornea*, according to its Convexity, for tho' it is *Concavo convexe*, yet its Convexity is more than the Concavity, especially in Purblind People; so that they are gather'd by this first Convexity, and hinders their falling so much on the *Iris*, to pass the better through the *Pupil*, in order to fall upon the Humour Chrystalline, where they suffer a Refraction, and no doubt is the principal one in the Eye. By the Convexity and Density of this Humour, they are in such a manner gather'd together, and sent thorough the Vitrious, to unite altogether upon the *Retina*, where they imprint the Object inverted; nor are we from that to reason, that Objects shou'd appear Topsie-turvie to us, for the Soul considers not so much the Rays place, as from whence they come.

For Example, supposing there were only two Pencils of Rays to come from the Object of a Man, that is, one from some part of his Head, another from the Foot; the former then must strike upon the lower part of the *Retina*, by which I must certainly judge it comes from above. The other coming from below, must strike upwards, and consequently on the

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the upper part of the *Retina*, and neceſſarily be judged to come from under.

I doubt if the Vitrious, as ſome think, any way changes the direction of the Rays, or diſtance of the *Focus*; for a *Lens*, or Convex, being placed at its proper diſtance, which we will ſuppoſe to be two Inches, and a ſolid Piece of Glaſs, or a proper Glaſs full of Water that lies cloſe by to it, and two Inches in Diameter, the *Focus* will appear juſt on the other ſide, *viz.* two Inches from the *Lens* as before.

The learned Doctor *Pitcairne* proves the Seat of Viſion to be in the *Retina*; and that the *Muſcæ* or black Spots, Smoak, Threads, *&c.* that are ſeen by People troubled with Vertigo's, Swimmings of the Head, or the commencing *Gutta Serena*, comes from the Obſtruction or Turgidity of the Blood Veſſels of the *Retina*; and that it cannot be from any concreted or glutinous Particles in the Humour Aqueous, which it's true cannot be accounted for to appear on the *Retina* according to the Rules of Opticks; although there are ſome things pretty hard to be reſolved, which I ſhall take notice of within a little, it's plainly demonſtrable that the Convex Glaſs of a *Camera Obſcura*, or any other being all full of cracks, flaws, ſpots, or moſtly all over Sand or Dirt, but that ſome Light come in, the Object will ſtill appear

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appear fair, without the leaſt Cloud or Spot in it, though perhaps a little more faint and not ſo bright, becauſe there are not ſo many Rays that enter, but ſtill there are ſuch numbers that come from all Points of the Object, and enter at the unſpotted parts of the Convex Glaſs, which ſtill makes the Image perfect.

This ſeems to contradict Monſieur *Maitrejean*'s Opinion, that ſometimes the *Muſcæ* or Spots we ſee may be occaſion'd by little Ulcers in the Chryſtalline, or Inflammation of the Blood Veſſels of the *Tunica chryſtallina*; although it's true he generally agrees it to be in the *Retina.*

It's certain the Patients commonly troubled with Cataracts, eſpecially the true ſort, ſee thoſe *Muſcæ* in the beginning of the Diſtemper, which muſt be allowed by all converſant in that Diſeaſe, although there are ſome Exceptions from that Rule.

The *Muſcæ*, or Spots, coming from a commencing *Gutta Serena*, Hyſterick or Epileptick Diſtempers, which no doubt is in the Blood Veſſels of the *Retina*, diſappear as thoſe Diſtempers go of, and are unconſtant; but thoſe attending Cataracts grow worſe, and appear conſtant, 'till the Sight be gone, and then the Needle is the Remedy; and the Cataract being beat down, are not any more troubled with thoſe Spots.

It's

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It's true, there are certain *Muſcæ* ſeen by ſome conſtantly, and have had them for many Years. This I take to be a ſort of *Varix* in the Blood Veſſels of the *Retina*, proceeding from too great Application in Reading, Writing, or holding down their Heads, as I have generally obſerv'd by thoſe People who are troubled with them, which its true by ſtraining may grow worſe, but have not known any further evil Effect to follow this Diſeaſe, ſuch as Blindneſs.

The firſt ſort of *Muſcæ*, or Blood Veſſels of the *Retina*, are ſometimes Prognoſticks of *Gutta Serena*, or total Blindneſs, which differs from thoſe attending the laudable Cataract, in that the Patient is deprived of all Senſe of Light, nor can any Manual Operation be of effect there; but on the contrary, in the true Cataract are ſenſible of Light and Darkneſs, and to be helped by the Needle. It will be pretty hard to account for the Obſervations to be made in curdly Cataracts, ſuch as their ſeeing thorough a Sieve or different Holes, and this being couched which breaks in Pieces, and falls to the bottom of the Aqueous Humour; but by ſome violent Motion part of theſe curdly Particles ariſing again, are to be ſeen, and again vaniſh when ſettled to the bottom, as I have ſaid

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said more fully in treating of that sort of Cataract.

But whether to attribute the *Muscæ* attending Cataracts to an Inflammation which happens to the *Retina* at that time, or something particular in the Nature of the Rays of Light, is what I shall leave to be decided by others.

OF

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OF THE DISEASES OF THE EYE.

PART II.

CHAP. I.

Of the growing together of the Eye-lids.

THE Eye-lids are sometimes, as well as the Tongue and other Parts, tied or grown together by a Membrane, yet rarely the whole Eye-lids, but is commonly open towards the great *Canthus*; and at which Place a small Directory is to be introduced betwixt the Globe and Eye-lids; then with a Lancet

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or Biſtory the Membrane is to be cut betwixt the *Ciliæ* upon the ſaid Directory: The Eye is to be kept open as much as may be, for fear of growing together again, and waſh'd with warm Claret, or Roſe-water and Honey.

CHAP. II.

Lagophthalmos, *or drawing up of the ſuperior Eye-lid.*

THE Cauſe is a Contraction of the *Rectus* and Paralyſis of the Orbicular Muſcle of the upper Lid, and is moſt commonly occaſioned by Burns or Wounds. Some pretend to make an Operation here by cutting the upper Eye-lid; but as I think it ſcarce curable, ſo I leave it.

CHAP. III.

Ectropion, *the lower Eye-lid falling down, or Inſide out.*

THIS probably proceeds from the Relaxation and Weakneſs of the Orbicular Muſcle of the inferior Eye-lid; for which Dorcils, or Rags dipt in warm Claret and Honey, or ſuch like, may be tried; nevertheleſs, I think, a Machine

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of Lead made on purpoſe for that Lid can be of greateſt uſe, being wore for ſome time upon it.

CHAP. IV.

The Antoniatonblepharon,

IS a Relaxation or Paralyſis of the *Rectus* and Orbicular Muſcle of the upper Eye-lid; in which Caſe ſtrengthning Fomentations are likewiſe to be uſed, although rarely cured; nor can cutting upon the Outſide, as ſome pretend, have any good Succeſs.

CHAP. V.

Of the Stayen, *or little Tumour call'd by the* Greeks Piſthia *or* Crithe; *the* Latins, Hordelium *or* Grando.

THIS is a little Puſh or Swelling which grows on the Edge of the Eye-lid; they may be treated all under the ſame Name, although oft-times much differing in their Nature one from another, ſome being of the Nature of *Phlegmon*, others and moſt part *Atheromatus*, and ſome *Oedematus*; the firſt ſort may be brought to Supuration by roaſted Apple, or Bread Milk and Saffron boiled to a Pouliteſs, and ap-

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applied at Night. The *Oedematus* may ſometimes be diſcuſſed with the *Empl. de ranis cum Merc.* The *Atheromatus* kind, as well as *Grando*, which frequently has ſmall Stones in it, muſt be opened with a Lancet, and afterwards dreſs'd with *Mell. Roſarum*; or if it be not enough cleans'd, waſh with *Aqua Fallopii*, then dreſs with the *Mell. Roſar.* There is ſometimes a very large inciſted Tumour ariſes on the Eye-lids, and perfect *Atheroma*, *Steatoma* or *Meliceris*. It is not ſo ſafe to cut out the Cyſtis here, as in other Parts, by reaſon of the want of Subſtance; but may be open'd, the Matter taken out, and then dreſs'd with warm *Egyptiacum*; or if that ſhould not conſume the Cyſtis, it may ſafely be touch'd with the lunar Cauſtick, and heal'd with *Mell. Roſarum* and Yolk of Egg.

CHAP. VI.

Trichiaſis, *or* Phalangoſis,

IS either a double Row of Eye-latches, or the Hairs growing inward; when they grow in, they wound and hurt the Eye, ſo that an *Ophthalmia* frequently accompanies it. The beſt Remedy is to pull them out; for the Bulbs out of

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which the Hairs grow ſtill remaining, is ſufficient to make them return; the Cauſe then being taken away, the Eye recovers it ſelf as before, in the mean time refreſhing *Collyriums* and the Univerſals are not amiſs.

CHAP. VII.

Pſorophthalmia, *or* Lippitudo.

THIS is occaſioned by a ſharp coroding Humour, which cauſes the borders of the Eye-lids to inflame, and ſometimes riſe into hard little Swellings, and in a ſhort time degenerates into ſmall Ulcers, which ſometimes renders common Pus, and other times a hard cruſty ſort of Scurf with Water, and ſometimes like Sand and Gravel; in this hard unkindly Scurf Emolient Fomentations are moſt proper, ſuch as thoſe made with Camomile, Roſes, Mallows, Linſeed, Fenugreek, *&c.* The little Ulcers may be cleans'd and heal'd with Claret, *Mell. Roſarum*, and a little *Egyptiacum*, or *Aqua Fallopii* and *Mell. Roſarum*. However this being healed, Care muſt be taken at the ſame time of the Univerſal Remedies, becauſe the Humour not having any Evacuation that way, may occaſion a greater Inflammation in the Eye, if not diverted otherwiſe.

CHAP.

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CHAP. VIII.

Verruca, Ficus *or* Sycoſis.

THESE Excreſcences the Eye-lids are ſubject to, as well as the other Parts of the Body; and likewiſe the Inſide as well as Outſide of the *Palpebræ*. The beſt and ſhorteſt way is to ſnip them off with a Pair of Scizors, the Ligature being too painful and troubleſome; if you fear their growing again, they may be touched on the Outſide of the Eye-lid with the lunar Cauſtick, but that is not to be done on the Inſide; although you may venture to waſh there with a little Vitriol Water. If they ſhould be of a carcinomatous Nature, as ſometimes they prove, they are better let alone than tampered with. The true Cancer ſometimes affects this part alſo; nor is there much to be done in that Caſe, excepting Paliatives and the Univerſals, which may hinder its Progreſs for ſome time; though if but juſt beginning, ſmall and very moveable, it may be cut off.

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CHAP. IX.

Sclirosis, *or* Durities Palpebrarum,

IS an Inflammation, hard and unkindly Tumour of the Eye-lids, which sometimes degenerates into *Schirrus*, and sometimes Cancer; in which Cases, as I have said, there is but little to be done; yet in the Beginning may be taken away, by Means of the Universals, and fomenting the Part with White-wine boiled with Linseed, Fenugrek, Chamomile Flowers, Roses, Mallows, Frogs, *&c.* and applying the *Emplast. de Ranis cum Mercurio.* The Eye-lids are subject to Impostumations, as other Parts, and may be treated much after the same manner; only Care must be taken not to bring it to too great Supuration, or to let the Matter be lodged there too long, because of the Thinness of the Parts, and Want of Substance, so that the *Palpebræ* might be destroy'd.

CHAP.

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CHAP. X.

Ægilops, *or* Fiſtula lachrimalis,

IS occaſion'd by a Tumour or ſmall Abceſs in the great *Canthus*, or Corner of the Eye; and when come to Maturation, and open'd, is generally called *Fiſtula*, although it proves not always to be ſo; that is, neither deep or callous, as *Fiſtulas* are. In this Caſe it may eaſily be cured by Mundificatives or Detergents, without the uſe of the actual Cautery, the Bone being no way affected. But in the true *Fiſtula*, where the Bone is carious, the beſt and ſureſt way is, after a good large Inciſion, (according to the Direction of the Fibres of the Orbicular Muſcle) to have the actual Cautery for that purpoſe to be applied to the Bone, once, twice, or thrice, as ſhall be found requiſite to make the Bone exfoliate, or come away. The *Os Unguis* comes out entirely, becauſe conſiſting but of one *Lamina*; but when the ſuperior part of the *Maxilla*, which joins the *Os unguis*, is affected, as frequently it is, this Part exfoliates. The Matter which comes from the Bone, when carious, is blackiſh coloured, and of a ſtinking fetid Smell. Sometimes the Bone may be exfoliate by means

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of a little Cotton dipt in Spirit of Vitriol, and applied upon it for two or three Dreſſings, with dry Cotton on the Top; after which the Oyl of *Guiacum*, or Powder of *Euphorbium*, is to be made uſe of, to bring away the exfoliate Bone, and the Wound cured by Abſterſives and Incarnatives. The *Caruncula lachrimalis* being ſwell'd only full of clear or ſerous Matter often cures of it ſelf; (ſo that unleſs it contain *Pus* is but little dangerous) for this being only a Stagnation of the *Lachrimæ* in that part, is ſometimes carried off by frequent ſqueezing with the Finger.

CHAP. XI.

Ecanthis, *or Excreſcence in the great Corner.*

THIS is a preternatural piece of Fleſh which grows to the *Caruncula lachrimalis*, proceeding either from a Superfluity of Nouriſhment to that Part, or the Remains of an *Ungula*, or from an ill-cured Ulcer. The more ſoft ſort may ſometimes be eat away with a little burnt Alome and Sugar-Candy in Powder; but the harder ſort is to be taken away by paſſing a Needle and Thread through the middle of it; and raiſing it up by the Thread, may be ſnipt

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ſnipt off with a Pair of Scizors, Lancet or Biſtory, and dreſs'd with a little Tincture of Myrrh and Honey. This Excreſcence may eaſily be diſtinguiſhed from the *Caruncula* by means of its Colour.

CHAP. XII.

Pterygium, Unguis, *or* Ungula,

IS a membranous Excreſcence, which for the moſt part begins in the great Corner of the Eye; they are commonly diſtinguiſh'd into *Ungula Membranoſa*, *Varicoſa* and *Adipoſa*. The Membranous, otherwiſe call'd *Panniculus*, is a fleſhy and nervous ſort of Excreſcence, and but rarely ſucceeds well in the Operation. The ſecond is full of turgid and dilated Blood Veſſels, and better let alone then touch'd. The third and moſt kindly, on which the Operation may ſafely be perform'd, is of a whitiſh Colour, and greaſie or fattiſh ſort of Subſtance. This, as well as the reſt, covers part, and ſometimes the whole *Cornea*, and runs betwixt the ſame and the outer Skin of the *Conjunctiva*. The Operation is perform'd after this manner: Take

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a Needle flatted forwards, and purposely blunted at Point, for fear of wounding the *Cornea*; let it likewise be a little curv'd, and having put in a Silk or Horse-hair, the latter of which I think is best, pass it gently betwixt the *Pterygium* and *Cornea*, that is, by crossing the Eye as from one Lid to the other; then cutting off the Needle, take an end with each Hand, raise it a little, though not to break it, which is easie; then edge your Thread first towards one End, and then to the other; that is, towards the two Angles of the Eye; and having entirely separated it but at the two Ends, tie it in the middle; then cut one End, and afterwards t'other, dressing the Eye with a little Honey and *Vitriolum album*. If the *Pterygium* be but beginning, it may be carried off without the Operation with Powders, such as that of *Ærugo*, *Alumen ustum*, *Vitriolum album*, Sugar-Candy, *&c.* likewise the Gall of most Animals is much commended.

CHAP.

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CHAP. XIII.

Of Albugo, *or the white Spot in the Eye.*

THIS may be reckon'd a little cold ſort of Tumour in the *Tunica conjunctiva*, for ſometimes it opens, is brought to Maturation, and heal'd without any great Pain. It may be conſum'd or cleans'd with Galls of Animals, Oyl of Pepper, Honey with Vitriol, and ſuch like. Some diſtinguiſh it into different ſorts, as that which lies upon the white of the Eye, and other on the *Cornea*: This diſtinction ſignifies but little, for the ſame Remedies ſerve for either. Thoſe who are but little Converſant in Diſeaſes of the Eyes, may readily miſtake, and take Ulcers or Cicatriſes for *Albugo*, meaning very ſmall Ulcers; but the Ulcer may be known by the many little Veins which are generally round it; as likewiſe the want of Subſtance may be ſeen if narrowly obſerv'd. The Cicatriſe generally follows ſome Small Pock, Wound or ſuch like in the Eye, which is not to be taken away.

CHAP.

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CHAP. XIV.

Of Phlyctæna, *or Ulcers of the Conjunctive and* Cornea.

THESE are occaſion'd by a ſharp Corroding Humour, and are by Authors generally divided into many ſorts, altho' I think they may be comprehended under greater, leſſer, deeper, and more malignant; nor does the Method much differ, only in making the *Collyriums* more or leſs Mundificative, as the Ulcers require; they generally appear white in the *Cornea*, and red in the white of the Eye; they may be cleans'd with *Mel Roſarum*, and a little *Ægyptiacum* or *Erugo Æris*, or a *Collyrium* made of Roſe-water, *Vitriolum*, *Alb. Alumen*, *Sacchrum Saturni*, and Sugar-Candy; as likewiſe the *Pulvis Nicotianæ*, *Ungt. tutiæ*, are ſometimes of good uſe. After cleanſing they may be dryed and heal'd with the *Troch. Alb. Rhaſis* diſſolv'd in Roſe or Plantain Water, or Egg-ſhells and Sugar-Candy pulveris'd.

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CHAP. XV.

Of the Carnous Excreſcences.

THESE ſometimes follow upon Ulcers or Wounds of the *Sclerotica* and *Cornea*, and may be conſum'd by the uſe of a Powder made of Vitriol. *Alb. Alumen Uſtum* and Sugar-Candy; or a little ſublimate with Sugar, or ℞ *ſucc. fænic. Chelidon anna* ℥iij, *Aloes* ℈j, *fell. Anguill.* ℥ſs, *ſacchr. cand.* ʒj, *Vitriol. Alb. Mell. Roſar.* ℥ſs, *Miſce fiat collyrium.* . . .

CHAP. XVI.

Of Ophthalmia, Fluxus oculi *or* Delachrimatio.

THE *Ophthalmia* is an Inflammation of the *Tunica adnata* or *conjunctiva*, which if ſlight, affects but the white: Yet when more violent, not only that and the *Cornea*, but likewiſe all this Membrane which covers the inſide of the Eye-lids round the Globe, and even the *Pericranium* it ſelf, from which its continued; and ſeems ſometimes to be affected, as I've frequently obſerv'd upon the uſe of Repellents, or cold Medecines to the Eyes, which

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which have occasioned a mighty weight above the Eye-brows and Forehead, when at the same time the Eye seem'd to be better.

The common *Ophthalmia* is generally occasion'd by Stroaks, Wind, Dirt, Dust, Fire, great Heat, or Cold; these for the most part are soon carried off, although sometimes degenerate into *Ophthalmia vera*, which however commonly proceeds from an inward Cause, and probably from a Viciation, or want of a due Secretion of some of the particular Glands of the Body, and these Humours not being separate, turn sharp and acid, as is to be observed in most troubled with this Distemper, being Bled, the Serous part proves very sharp to the Taste; and this generally occasions a greater Secretion, or Flux of Tears * from the lachrymal Gland by some call'd *Fluxus oculi* or *delachrimatio*. However, the *Ophthalmia vera* is sometimes dry, and most commonly in the Sanguine, Cholerick or dry Constitution where there is but little *Serum*.

* *For the Want of a due Secretion in some of the Glands must occasion greater in others.*

Another sort of *Ophthalmia* call'd *Chemosis*, is a heaving or blowing up of the *Tunica conjunctiva*, so that the *Cornea* in place of Convex seems Concave.

The common sort of *Ophthalmia* may be cured by the use of Simple *Collyriums*, with-

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without much taking notice of the Univerſals; but in the *Ophthalmia vera* the Univerſal Remedies are more to be taken notice of; the *Collyriums* without (as I've frequently obſerved) rather doing harm; for by ſtopping the Humour, as I've ſaid before (which wants to be evacuate) occaſions that heavineſs in the Forehead, and falls down more vehemently in a few Days.

Diet is no doubt to be taken notice on, for which *Gordonius* ſays,

Hæc oculis multum, ſol, pulvis, fumus & æſtus
Ventus cum fletu, vina, venuſq; nocent
Acria ne Mandas, nec quæ ſunt plena vaporum
Nec cæpas, lentes, Allia, pira, fabas.

Although Wine no doubt is in moſt Caſes prejudicial to the Eyes, yet I have found it very neceſſary in ſome Caſes, where I could imagine it to proceed from crude and indigeſted Humours, eſpecially in People of Age, or thoſe much uſed to Wine.

The Univerſals are to be ordered as the Phyſicians or Surgeons ſhall find requiſite, ſuch as Purging, Bleeding, Glyſters, Cupping, Bathing, *Errhines*, *Cucuphas*, *Diaphoretics* and *Diuretics*, Setons, Iſſues, Bliſters,

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Blisters, *&c.* although I must make this Observation on the latter, which is, that upon applying the *Epistpastics*, the Inflammation generally grows worse for the first Day or two, although perhaps better afterwards, which probably is as long as the Subtile Particles of the *Cantharides* remain in the Blood: However, I reckon it more safe, and rather chuse to use them in a common Inflammation than very violent one. There are some Observations on particular Secretions, which I have found very useful in these Cases. I'm however neither bold or willing enough to write my private Opinion on that Subject; but the ingenious will soon find it out. It is wonderful to observe the Sympathy betwixt the Eyes and Ear, and especially in this Disease, when oft times being repell'd by Medicines, or put back from the Eyes, falls upon the Ear, and occasions great Pain or Deafness or dullness of Hearing, and again the Ears growing better, returns to the Eyes. I know not if this may be reckon'd to proceed from the *Pericranium*, which not only seems to be continued to the Eye; but likewise to the *Tympanum*, or whether the fifth pair of Nerves may Sympathise in that manner, because its first Branches make the *Ramus* and *Plexus Ophthal-*

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Ophthalmicus, and likewise distribute to the Lachrimal Gland; it has also some of the branches of its third Ramification, which makes up the *Chorda Tympani*, joins with the *Portio Dura*, and to the Muscles of the *Malleolus*.

Common Colds, Disorders, or Obstructions of the Nose, likewise affect the Eyes, by reason of the affinity of the Parts, and for which Sternutatories are frequently of use.

The *Collyriums* are most frequently made up with the *Aq:*, *Ros ar:*, *plantag:*, *fenicul:*, *Chelidon:*, *Euphraq:*, and *calcis*; Powders such as *Tutia*, *lap:-calaminaris*, *Troch:*, *Alb:*, *Rhasis*, *Sacharum Saturni Camphora*, *Testæ Ovorum*, *ossa sepiæ*, *Vitriol:*, *Alb:*, *Roman. Margaritum*, *Aloes*, *Alumen*, *&c.* Sometimes *Collyriums*, made up with Claret or other Wines, does very well; but as the Disease differs very much, so the particular Method or Remedy cannot be so well set down, but must be used according to the Age, Constitution and Nature of the Disease, which I leave to the good Judgment of the Physician or Surgeon. Mell. & lac. muliebria.

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CHAP. XVII.

Rhexis, *or the burſten Eye.*

THIS is occaſion'd either by a violent Blow which breaks the *Cornea*, or by an Ulceration of that *Tunica*; ſo that all the Humours run out, and often a Supuration of the *Uvea* and *Retina* themſelves happens.

The Ulcers ſometimes begin externally on the outer Superfices of the *Cornea*, and ſometimes by *Pus* gather'd together under the ſaid Tunic.

As it is for the moſt part occaſioned by ſome violent Stroak or Blow, ſo generally the reſt, and other parts of the Eye, are contus'd and inflamed, for which reaſon it will be very proper to make uſe of the Univerſals, ſuch as Bleeding and Purging, and Pidgeon's Blood dropt in the Eye.

For outward Application Dorcels, or Rags dipped in Wine, white of Eggs, Oil of Lillies, with a little *Sacharum Saturni.*

For Laceration, or Wound in the inſide of the Eye, or Eye-lids, or *Cornea*, waſh'd with a little warm Claret and Honey, or Yolk of Egg, with Honey of Roſes, and Women's Milk warm. The Fomentations may be made for the whole Eye with the common

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common Herbs boyl'd in white Wine, ſuch as Lavender, Hyſop, Roſemary Flowers, Roſes, Wormwood, Melilot and Chamomile Flowers.

Cicatriſe with Shells of Eggs calcin'd in Powder, and *Tutia* prepared.

If a *Fungus* ariſe make uſe of the *Alumen Uſt.* and white Sugar; or if occaſion be, mix it with a little *Vitriolum Alb.*

Thus being cur'd, altho' the Cryſtalline, Vitrious and Aqueous Humors be run out; yet if moſt of the *Tunica Choroides* be remaining, that it is not wholly Supurate, the Globe will be ſupplied with a Watry Humour, probably the ſame with the Aqueous, which, as I've taken notice in the Deſcription of thoſe Parts, is carried into the Vitrious and Chryſtalline, when as yet in the Eye; they are, as I have ſaid, of a particular Structure, and no doubt in the firſt Formation.

The Globe, however, by Conſummation and Cicatriſation of the Parts, rarely comes to be ſo big as formerly.

This Misfortune, no doubt, is a great loſs to the Beauty of the Face, and the only help left for that is the uſe of an Artificial or Glaſs Eye, which is ſo naturally made by ſome, that 'tis ſcarce to be perceiv'd, and will turn to and fro as the Globe does.

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CHAP. XVIII.

Synchiſis, *or a Confuſion of the Sight, Blood and Humours of the Eye.*

THIS might come in with the former, generally proceeding from the ſame Cauſe, ſuch as Blows, only the *Synchiſis* may be reckon'd the leaſt Violent, or without Laceration of Parts, it's true the Violence of the Stroak nevertheleſs often times bruiſes the Vitrious Humour, or puts the Chryſtalline out of its place, with Extravaſation of Blood, and Inflammation of the Parts. Theſe occaſion violent Pains to the Patient.

The Method for Cure may be taken much as in the former for *Rhexis*, only abſtaining from the Mundificatives, Abſterſives or ſharp Medicines being the moſt proper in Solution of Contenuity, which rarely happens in *Synchiſis*; but if the Parts within ſhould come to a Supuration, Ulcerates and Corode the *Cornea*, it may then properly be call'd and treated as *Rhexis*.

CHAP.

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CHAP. XIX.

Of the Eye ſtarting entirely out of the Orbit by Stroak or Wound.

IF there ſeems to be but a ſmall Laceration, Relaxation, or Inflammation of the parts, it may be recovered by the uſe of warm Fomentations and *Collyriums*; but if it be almoſt entire, ſeperate, and out of the Orbit, it muſt be extirpated, and quite cut out, as altogether uſeleſs.

The Cavity of the Orbit may be filled with Dorcels dipt in Tincture of Myrrhe and Aloes with Claret and Hony; or if the Flux of Blood ſhould be great, put with the Lint Powder of Bole Armenic, *Sanguis Draconis*, *G. Maſtich* and *Tragaganth* equal parts; and above all white of Egg beat up with Alumn; or white of Egg, Oyl of Roſes, Tincture of Myrrhe and Bole Armenic. *Some uſe dry Lint.*

The Univerſals, as Bleeding and Glyſters, is not to be neglected, to prevent a Fever. It may aftewards be dreſſed with the *Linimentum Arcæi*, or *Terebinth*, with Yolk of Egg and Honey.

It may be Mundified and Cicatriced as other Wounds.

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There muſt be care taken not to cauſe too great a Supuration, for fear of the Bone, which has but very little Carneous Subſtance to cover it.

CHAP. XX.

Of the more common or more ſlight Wounds of the Eye, or Duſt, Dirt, &c.

WOUNDS of the Eye are rarely mortal, nevertheleſs they are frequently very painful, inflam'd and dangerous as to Loſs of Sight. Healthful Bodies may receive ſlight Wounds in any part of the Eye, excepting the *Cornea,* and often eſcape without Loſs of Sight; and even ſometimes the *Cornea* it ſelf may be ſlightly wounded, and the Sight remain, although this is rare, being for the moſt part the *Cornea* becomes Opac, which occaſions Blindneſs; or the Cicatriſe remains in the tranſparent Part of the *Cornea,* and obſtructs many of the Rays; by this means the Objects are not ſeen ſo perfectly well.

Wounds then in the *Cornea* are the moſt dangerous for Loſs of Sight of any of the external Parts of the Globe.

The Wounds in the *Palpebræ,* or betwixt the Globe and Orbit, are not ſo much to be fear'd; but thoſe of its Muſcles or Nerves are commonly very dangerous. In

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In all Wounds or Diſeaſes of the Eyes, where there is any Inflammation to be feared, the Univerſals, ſuch as Bleeding, Purging and Glyſtering, are not to be neglected.

If there be any extraneous, ſharp or pointed Bodies remaining or ſticking in it, they may be taken out with a Pair of little Pincers.

Some make uſe of a ſtript Straw or a Feather.

If any rough little Bodies, Dirt or Duſt, try to waſh it out with a little warm Roſe-water, or a ſoft Bit of Sponge, made faſt upon the End of a Piece of Whalebone, and being dipt in Roſe, Fennel or Plantan Water; having turn'd up the Eye-lid, go gently with the wet Bit of Sponge along the Inſide to bring away what is troubleſome.

Some make uſe of *Portugueſe* Snuff with very good Succeſs, to bring Dirt or Duſt out of the Eye.

But having received a ſlight Wound in any part of the Eye, let ſome Drops of the Blood of a Pidgeon be put in, or of Woman's Milk, and let it be kept ſhut with White of Egg beat up with a piece of Allum clapt on the Outſide, or Fomentations; neither is it proper to open it often.

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In the Operation for couching the Cataract, I never make uſe of any thing to cure the Wound, nor open the Eye for at leaſt eight or ten Days, in which time the Orifice is perfectly heal'd up.

In performing this Operation, the Aqueous Humour, or ſome part of it, often runs out, but is again ſupplied in a Day or two's time. I have frequently ſeen a great part of it iſſue out upon drawing the Needle out of the Eye, ſo that the Globe could viſibly be perceiv'd not ſo full as before, which in a Day or two was again fill'd as formerly.

It's true however that if the Eye be much ſqueezed, and that the Aqueous Humour comes all out, the other Humours readily ſuffer; becauſe by ſqueezing you may then more eaſily put them out of their Place, or ſwell or break the vitrious Humour; all which will prejudice the Sight, and make the Eye more full, or to ſwell or bunch out, as I've obſerved in ſuch Caſes.

For common Wounds in the Eye, a *Collyrium* made up with *Tutia* prepar'd, Myrrh, Aloes, Saffron and *Mell. Roſarum*, diſſolv'd in Roſe or Fennel Water, is very proper, eſpecially after the firſt dreſſing with Blood of Pigeons, or Woman's Milk.

The

The White of Egg and Saffron, beat up with Oyl of Roses and Wine, may be laid on the Outside with Rags.

CHAP. XXI.

Of Hypospagma, *or Ruption of the Blood Vessels.*

THIS is occasion'd by less violent Blows which only cause an Eruption, or breaking of the Blood Vessels, such as those of the *Conjunctiva*; the Blood runs betwixt the Membranes, causes Redness, and afterwards Lividness in that Part.

As I have said before, the Blood of a Pigeon, or Woman's Milk, is very proper at first, and afterwards a Water made up with *Sachar. Satur*; a little Camphire and Saffron dissolv'd in *Aq. Fenniculi*, and outwardly, as before; or White of Egg beat up with Rose-water; but if an Ulceration of the Parts should happen, it must be treated, as I've said in the foregoing, with mundifying *Collyriums*.

CHAP

CHAP. XXII.

Exophthalmia, *or the preternatural big Eye.*

IN this caſe the Globe of the Eye is ſwell'd to an extraordinary Bigneſs out of its Orbit, ſo that it cannot be cover'd by the Eye-lids without violent Pain there, as likewiſe in the Head, and ſometimes accompanied with a Fever.

It's occaſion'd by the violent falling down of a hot and ſharp Humour, which ſwells the Vitrious, and augments the Aqueous Humour to a greater Degree than common, and likewiſe ſwells the other Parts within the Globe.

There is generally a great Heat and Inflammation in the Parts all round about. There ſeems to be another ſort not ſo hot and ſharp as the former, and comes on more ſlowly, but ſwells to an extraordinary Bigneſs out of the Orbit.

This violent Swelling of the Globe cauſes ſuch a Stretching and Extenſion of the Muſcles and Nerves, as to occaſion that terrible Pain and Dolour. Whether this comes ſuddenly or ſlowly, it often times remains in that Condition for a long time, nor does the Eye recover it ſelf to its former

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mer Bigneſs but very rarely, as likewiſe the Sight is commonly loſt.

Sometimes the Humour is ſo very violent, hot and ſharp, that it deſtroys all the Parts within, and comes to Supuration. This is accompanied with moſt intolerable ſhooting Pains, ſo that I've known the poor Patient even weary of Life.

Upon Supuration the *Cornea* is coroded, and being open'd, the ſupurate Parts run out; and when cleans'd, the *Cornea* cicatrizes, but the Eye generally remains leſs than the natural Bigneſs.

It's true ſometimes, without coming to Supuration, it recovers it ſelf to the natural Bigneſs, or more commonly leſs than before.

Whether this be by the Humours returning by the Blood Veſſels, or whether by Tranſpiration through the Tunics of the Globe, is what I ſhall not determine, although I think the latter ſeems the moſt probable.

The Sight however, as I've ſaid, is loſt; for probably by the violent Extenſion and Tumefaction of the Parts in and about the Globe, the Blood Veſſels of the *Retina* ſuffer in the ſame manner as in *Gutta ſerena*, ſo that the Sight muſt be entirely loſt.

The Cure depends much on Evacuations, ſuch as Bleeding and Purging, likewiſe Cupping

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Cupping behind the Neck is of very good uſe. *Epiſtpaſtics* behind the Ears, and *Setons* or Iſſues behind the Neck or on the Shoulders.

His Drink ſmall and Diet cool and regular, as the Phyſician ſhall preſcribe.

For outward Application, Rags dipt in White of Egg, beat up with Roſewater and ſome Grains of *Sachar. Saturni.* This is better to be applied warm than cold, becauſe the Pores are more open'd by that Means, and conſequently give more free Paſſage for the Humours.

Upon the declining, toaſted Apples beat up with White Wine, Saffron and a little Camphire is of very good uſe.

If this Method ſucceed, nevertheleſs the Sight, as I've ſaid, is generally loſt; or if any remain, is much worſe than before.

But if this Method ſhould not ſucceed, and that it tends to Supuration, a Poulteſs of White Bread and Milk boil'd up with Siffron may freely be made uſe of, and applied warm to the Eye.

When it is come to Supuration or Maturity, the *Cornea*, or Part moſt enclining to break, may be open'd with a Lancet, without ſtaying till it breaks; after which *Collyriums*, as formerly preſcribed, may be made uſe of.

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CHAP. XXIII.

Atrophia, *or Decay of the Eye.*

THIS is occasion'd for want of that due Nourishment to the Globe and Humours of the Eye; by which means it diminishes, and the Sight is either entirely lost or much weaken'd.

The Cause probably is Obstruction or Destruction of the Vessels which nourish the Parts, either by Strokes or sharp Humours; so that the Blood cannot pass, or the Humours be secern'd to the Eye as formerly. It frequently happens after the Cure of the *Exophthalmia.*

The Cure of this Disease is attempted by some with the use of Errhines, by which means the Parts are irritated, and the Humours forc'd down; as likewise the use of Fomentations, and a good, clean, healthy and nourishing Diet: However, as I look upon it an incurable Disease, so I leave it.

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CHAP. XXIV.

Hypopyon, *or an Abceſs of the* Tunica Cornea.

IT's an Impoſthumation or *Pus* gather'd together betwixt the *Laminæ* of the *Cornea*; it's true, the *Pus* is ſometimes got under that Tunic, the Abceſs being open'd inwardly, and is ſtill term'd *Hypopyon*.

It is either cauſed by a hot and ſharp Humour flowing to the *Cornea*, or by Strokes which occaſion Impoſthumation of that Part.

It differs from *Phlyctena*, in that the former is properly an Abceſs with good digeſted *Pus*, and the other a little Puſtle only on the Superfice of the *Cornea*, and turns to a ſmall Ulcer with indigeſted thin Matter.

This Abceſs or *Hypopyon* is generally follow'd with loſs of Sight, either by means of the Cicatrice, or deſtruction of the Parts about it.

The Abceſs of the *Sclerotica* likewiſe comes under this denomination, although leſs dangerous.

If the *Hypopyon* be very ſmall, and the Humour not very violent, ſome Sight may ſtill

ſtill remain, even after the Operation, although there will ſtill remain a Cicatrice which neceſſarily impedes the ſame.

And the nearer the Abceſs is to the external Superfice, the leſs dangerous it will prove.

As to the Cure, it may firſt be try'd by Evacuations, Repellents, and Diſcuſſives, or the Method be taken much as in *Ophthalmia*; but in caſe this ſhould not ſucceed, which rarely it does, then recourſe muſt be had to Manual Operation, and may be perform'd in this manner.

Let the Patient be placed in a convenient Chair, or in his Bed, his Head to be ſupported by an Aſſiſtant, who at the ſame time may draw upwards the Skin and frontal Muſcles, after which ſome make uſe of the *Speculum Oculi*, altho' I rather chuſe only my Finger and Thumb to keep the Globe fix'd and the Eye-lids open; then taking a ſmall Lancet, I make my Aperture according to the bigneſs of the Abceſs.

It is to be open'd in the inferior or lower Part where it inclines moſt to break, nor does the *Pus* always immediately follow, becauſe it's generally very thick, but comes out ſoon after as the Wound opens more.

It may be cleanſed with prepar'd *Tutia*, Aloes, Honey of Roſes, White-wine and Fen-

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Fennel-water. *Galen* tells us of one *Juſtus*, who uſed to cure the *Hypopyon* by a ſudden and rude ſhake, by which means the *Pus* went down to the bottom of the Aqueous Humour.

No doubt, if ſo, the Abceſs has been more inclin'd to break inwardly than otherwiſe, and which rude ſhake has readily effected it, ſo that the *Pus* going inwards, might fall to the bottom of the Aqueous Humour.

And this *Pus* ſometimes hardens when it is not of a malignant Nature, and remains ſo without any other Diſorder to the Eye.

I have known an Impoſtumation to happen in the *Iris* after a violent Stroke, ſo that the white Matter was plainly to be ſeen upon the *Iris*, although that ſide of it was ſhrunk and the Pupil leſſen'd there, yet on the other ſide perfectly well, ſo that the Patient ſee; but as it were half-ly, or that ſomething were before half his Sight; the *Pus* it ſeems has harden'd, and remain'd ſo for many Years. Of the Diſeaſes of the *Uvea*, more hereafter.

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CHAP. XXV.

Of the Abcess or Impostlhumation of the Uvea *and* Choroides.

WHEN I speak of *Uvea*, I mean only that behind the *Iris*, because sometimes that Part called the *Choroides* is by some called *Uvea*: An Abcess then or Inflammation in the fore Part, or properly betwixt the *Uvea* and *Iris*, it may be perceived in at the transparent Part of the *Cornea*, but when in the *Tunica Choroides* is not perceptable, and can only be guess'd at by the violence of the Pain, and prejudice of the Sight, although this is but conjectural. If it should not come to Supuration, the Eye readily recovers it self as before, but if it comes to Supuration, the *Pus*, as I have said in the foregoing Chapter, being Kindly, and not Malignant, may come out or harden; it oftentimes precipitates to the bottom of the Aqueous Humour, and does no further Damage.

But that of a Malignat Nature oftentimes corrupts and destroys the whole Eye.

Evacuations and cooling *Collyriums*, such as in *Ophthalmia*, are first to be made use on, but if they should not be Effectual, and that it will Supurate; to quicken it,

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and eaſe the Pain, make uſe of a Poultiſs or Cataplaſm of Bean-flower, Camomile, and Melilot-flowers, Fenugrec, Linſeed, and a little Saffron boil'd in Milk; if the Corruption break through the *Cornea*, it may be treated as *Rhexis*; but if the *Uvea* ſhould come through the Overture of the *Cornea*, it is then called,

CHAP. XXVI.

Staphyloma, *or falling out of the* Uvea.

THIS is commonly cauſed by Putrid and Malignant Ulcers of the *Cornea*, or by Strokes or ſharp Inſtruments, ſo that this *Tunica* being broke, the *Uvea* falls out, and receives Names according to the Figure it makes, as *Staphyloma*, like a Grape or Melon, or an Apple; or *Helos*, or *Clavus*, like the head of a Nail; *Myocephalum*, as the head of a Mouſe, theſe are alſo by ſome called *Proptoſis*.

In the beginning of this Diſeaſe, it may ſometimes be cured or hindred from growing worſe by cicatriſing *Collyriums*, ſuch as Claret, *Mel-Roſarum*, and *Trochiſ. Alb. Rhaſis*; although if the Ulcer be very foul, it will be very proper to make uſe firſt of a more mundifying *Collyrium*, but if this ſhould not prove effectual, that it grows worſe,

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worſe, or has already been of an old ſtanding, recourſe muſt be had to the Operation, and may be perform'd after this Manner.

The Surgeon being plac'd in a Chair, let the Patient ſit betwixt his Legs upon the Ground, with his Back towards him.

And putting his Head backwards upon the Surgeon's Knee, the Operator is to tie it with a ſingle Thread, if the Baſis be ſmall, but if large and broad, he ſhall paſs a Needle with a double Thread through it.

And taking the two ends of the one Thread tie it above, and do the ſame with the others below, ſo ſtrait as that it may decay and putrifie, which it readily does in a few days time.

Nevertheleſs, the Aqueous Humour generally runs out after it comes to Supuration, ſo that I think the Lancet does as well, commonly ſpeaking, and leſs painful; as ſoon as the Aqueous Humour is let out, the *Uvea* ſhrinks, and again retires it ſelf into the Eye.

After that, as I have ſaid, the Mundifying and cicatriſing *Collyriums* are to be made uſe on.

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CHAP. XXVII.

Mydriasis, *or preternatural Dilatation of the* Pupille.

THIS is an extraordinary Dilatation of the *Iris* and *Uvea*, so that the *Pupille* becomes very large and wide; this is commonly taken to be a Disease of the *Uvea*, although it's certainly one of the Vitrious, and that the Symptom of it; for the Vitrious Humour being tumify'd or swell'd bigger than it's usual, will press upon the sides of the Globe which helps to dilate the *Pupille*, and will also force the Christaline Humour forwards, and the same coming to touch the *Uvea* will likewise contribute to the Dilatation of that *Tunic*.

This will also cause a confused sight of Objects at a distance, as they are commonly troubled with who have that Disease.

It is very difficult to Cure, but the most proper Method is good Dyet, abstaining from what is Vaporous, Bleeding, Cupping, Purging, and such like Evacuations. *Rhasis* and other Authors advise Kids Galls, Pigeon's-blood, and *Collyriums* to be made use of in the Eyes for this Disease, altho' in my Opinion can be but of little use.

The Decoction of Sarsa will be more useful.

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CHAP. XXVIII.

Of the preternatural Contraction of the Pupille.

THIS may either be a Vice of the *Uvea* it self, or by Viscous and bad Humours in the Aqueous, as in the Malign Suffusion or Cataract, which probably clog and go in betwixt the Interstices of the Fibres of the *Uvea*, so as to hinder them from contracting or acting as they should do; it is a certain Symptom and always accompanies this sort of Vicious Cataracts. In fine, from whatever Cause the Contraction of the *Pupille* proceeds, Medicines are of little use, for which I shall leave it, and treat of

CHAP. XXIX.

Nyctalopia, *or Night Blindness.*

IT is more to be known by the Account we have from the Patient than any thing to be perceiv'd by us, the common Symptoms are these; the Eye seems no way affected, and sees tolerably well in the Day-time, but with greater difficulty as the Light

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decreaſes, ſo that when dark they cannot ſee at all, or even with Moon-ſhine.

It is certainly a Defect in the *Retina*, whoſe Medulary Fibres ſeem to require a ſtronger Vibration from the Rays of Light than common; but whether this proceeds from viſcous Humours or Defect of the Spirits is what I ſhall not pretend to determine.

But it is to be obſerved, that in old People, or where it is of long ſtanding, is ſcarce curable.

If there be Plenitude Bleeding and Purging is very neceſſary, as likewiſe Veſicatories behind the Ears and Neck, after which the Decoction of the *Sarſa* and *Guiac* is of very good uſe.

CHAP. XXX.

Hemeralopia, *or Day Blindneſs.*

THIS is quite contrary, for the Patient cannot ſuffer Light, and often accompanied with great Pain, and as it grows darker ſo he ſees beſt; this ſeems to be an Inflammation of the *Retina*, or its Fibres too much extended, that the Light is too violent, or makes too ſtrong a Vibration; in ſhort, it's generally cauſed by *Opthalmia*, or other Diſeaſes of the Eyes, or Head,

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Head, ſo that its Cure is not particular but depends upon the others, ſuch as *Opthalmia*, violent Head-ach, Wounds of the Head or Eyes, Abceſs or Ulcers of the *Cornea*, &c.

CHAP. XXXI.

Of Amauroſis, *or* Gutta Serena.

THIS is commonly called an Obſtruction of the *Optic Nerve*; Monſieur *Maitre-jean* compares it to a ſort of Paraliſie of that Nerve, as happens to the other Organs or Parts of the Body; but the ingenious Dr. *Pitcairn*, in his *Theoria Morborum Oculi*, ſhews it to be an Obſtruction of the Blood-Veſſels of the *Retina*, ſo that when it is not yet confirm'd, (but commencing) or only ſome of the Blood-Veſſels of the *Retina* obſtructed, it is then the *Muſcæ* appears, or black Spots, Clouds, or Smoak.

It is ſometimes occaſioned by a Compreſſion of the *Optic Nerve*, by reaſon of ſome Tumour growing thereabouts, or by Contuſion, Wound, or bruis'd Blood in thoſe Parts, ſo that it proceeds ſometimes from an Internal, ſometimes an External Cauſe.

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It either comes by little and little, or ſuddenly all at once; it often ſeizes but one Eye, other times both, and this without any external Appearance to the Byſtander, the Eye ſeeming well, although there is a total depravation of Light, and the Pupil is as uſual, neither much dilated or contracted. *Nyctalopia* or Night-blindneſs is diſtinguiſhable from the former, in that there is ſtill ſome Sight remains, and can ſee Objects, tho' confuſedly.

As to the Cure, ſome of the Antients as well as Moderns have pretended to it, and ſome of the latter, and of our moſt famous Phyſicians, adviſe the uſe of *Mercury*, ſome by Purging it off next Morning, others by putting the Patient under an entire Salivation; I ſhall only ſay, that many good Reaſons might be given againſt this Practice, and that I have known ſeveral, (which I could name were it proper) that in a commencing *Gutta Serena*, by taking this Method, was confirm'd and wholly Blinded, but never knew any cured. Monſieur *Maitre-jean*, who ſeems to have had great Experience that way, leaves it, and ſays, it's ſeeking out the Philoſopher's Stone, for that it's incurable.

It's true, I have known our famous Oculiſts here in *London* pretend to have cured a *Gutta Serena* in twenty four or forty eight

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eight Hours; but I am ſorry I muſt ſay, that I am perſuaded none of theſe ingenious Gentlemen know that Diſeaſe; from the Dimneſs follows *Scotomia*, or from *Nyctalopia* or the Dilatation ſwelling, or Extention of the Vitrious Humour.

As I never knew any cur'd of the true *Gutta Serena*, ſo I ſhall not ſet down any Method, but leave it to the Authors and Practitioners, who ſhew its Cure as plain as that of a Whitloe.

CHAP. XXXII.

Of the Preternaturnal Extention of the Vitrious Humour.

AS all Parts of the Body are ſubject to Diſeaſes, ſo no doubt the Vitrious Humour is, though but little taken notice of by Authors; a Diſeaſe proceeding from an internal Cauſe, is readily occaſioned by viciouſneſs of the Fluids, or too much or too little flowing to the Parts.

In this Caſe then there ſeems to be too great a Flux of Humours into the Body of the Vitrious, which it ſwells, dilates, or extends beyond its uſual, and conſequently forces the Chriſtaline forwards, by which means Viſion becomes more imperfect, and as it augments ſo the Sight muſt leſſen; this

See the Deſcription of the Humour Vitrious.

this by its Extention and preſſing upon the *Tunica Choroides*, makes the *Uvea* to Dilate, or widens the Pupil, being a conſtant Symptom of this Diſeaſe, and is ſtill made larger if the Chriſtaline forces forward upon the *Uvea*.

The Cure conſiſts in Bleeding, Purging, Cupping, Iſſues, and ſuch like Evacuations, a dry Dyet, and the Decoction of *Sarſaparilla*, *Saſaphr.* and *Guiac*; it's a good ſign when the Sight grows better.

If it be nothing but the pure Humour, which fills the little Celules of the Vitrious being too Viſcous, which occaſions its Dilatation; it is not ſo dangerous as when of a Vicious and Malign Nature, in which caſe the Chriſtaline likewiſe ſuffers, and a total Deprivation of Sight follows.

This Diſeaſe, as I have ſaid, is frequently taken for *Gutta Serena*, and ſeems to have been miſtaken by the Antients as well as Moderns, for *Sennertus* deſcribes it as a Diſeaſe of the *Optick Nerve*, and ſays, *Cognoſcitur hoc Malum, quod Oculi plane Clari apparent Nihilque vitii in iis animadvertitur, Niſi quod Pupilla Nigrior, & amplior apparet.*

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Which are properly ſigns of Extention of the Vitrious Humour, and not of *Gutta Serena*, as I have ſaid before.

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CHAP. XXXIII.

Of Hypochyma, Suffuſio, *or* Cataract.

IT has always been the Opinion of the Antients, and moſt of the Moderns at this preſent time, that the Cataract is nothing elſe but a Viſcous, Tenacious, or Glutinous Matter, gathered together in the Aqueous Humour of the Eye, where, by length of time, theſe ſmall ſlimy Fibres are compacted and hardened into a Species of *Pellicula*; ſome have deſcribed the Place of its ſituation in one part of the Aqueous Humour, ſome in another; neither of which Opinions is ſufficient, ſince it differs according to its Nature, however, generally they are ſeated betwixt the *Uvea* and the *Chriſtaline*, or indeed, rather immediately lying upon the Lenſe, this I think may be ſaid without Exception of the true ſort, or thoſe which are to be Couched; but it's certain likewiſe, that there is a Malign ſort of Suffuſion which mixes with the whole Aqueous Humour, and in this caſe there is nothing to be done.

There are, however, lately ſome new Practitioners that give us a quite different Account of this Diſeaſe, eſpecially Monſieur *Briſceau* of *Tournay*, and *Maitre-jean*

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jean of *Paris*, having both writ againſt this common Opinion, and although theirs ſeems abſurd at firſt View, yet who reads them, eſpecially the latter, will find that he underſtands both Anatomy and Opticks very well; he poſitively affirms by many Obſervations on dead Bodies, who had Cataracts, that the ſame is a Diſeaſe, and an alteration of the very Chriſtaline Humour it ſelf, which waſtes, decays, and becomes Opack, and is the very Body of the Chriſtaline that is couch'd or beat down in the Operation.

This ſeems very ridiculous at firſt View, and there is immediately accuſed of not underſtanding Opticks, although, as I ſaid before, who reads him will find the contrary; I will not however affirm his Opinion to be true, but ſhall give a ſhort hint of it, and afterwards my Sentiments and Obſervations upon the ſame.

In his Deſcription of the Organization of the Eye, he conſiders the uſe of every one of its Parts in particular, and the nature of Viſion by ſeveral Experiments in Opticks, and ſhews, that Images of Objects are painted on the *Retina*, without any Convex Glaſs or Chriſtaline, which no doubt is only to make the Objects or Sight more perfect, as may be ſeen in my Theory of Viſion.

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Nor is he the first of that Opinion, for the famous *Plempius* of *Amsterdam*, in his Fourteenth Chapter and Third Book, where contrary to the common Opinion, that Vision was form'd in the Humour Christaline, he says, *Dicam ne vero etiam omnibus inopinatum quidpiam? Aio enim vero crystallinum non Nobiliori in Oculo fungi officio quam aqueum & Exempto crystallino oppletoque loco ab humore vitreo visionem. Nihilominus celebratum iri. verum non tam distinctæ, quam nunc confusa enim esset in retiforma pictura, nisi alio situ, quam quem nunc obtinet, retiformis locaretur.*

It's true, he agrees with the common Opinion in Cataracts, however Monsieur *Maitre-jean* says, that this learned Author shews himself to have had a perfect Knowledge in the Theory of Optics, but that he wanted the Practice in Couching, and the Observations on such Bodies as he had made.

Galen seems to favour this new Author's Opinion, in his Twelfth Chapter *de Oculis*, where speaking of the Cataract, he says, *hujus aquæ color est diversus; quædam enim aëri quædam vitro æmulatur, alia est quasi album habens colorem, alia quasi cœli colorem, alia quasi viridem, alia quasi venetum; unde antiqui Cataractas, veneticos*

veneticos oculos appellerunt ſed differentia eſt, quia venetici duobus modis fiunt vel propter aquam, ſi nimium fuerit coagulata; vel propter ſivitatem quam patitur Chriſtallinus.

However, *Galen*'s Opinion was, that there could be no Sight but by means of the Chriſtaline; our Author likewiſe cites *Oribaſius*, in his Forty Seventh Chapter and Eighth Book, where he ſays, *Glaucoma & ſuffuſionem veteres unum eumdemq; morbum eſſe exiſtimarunt*, &c. ſpeaking of *Glaucomas*, and that ſeems ſtill more to favour his Opinion; thoſe who are more curious may ſee his Book, where they will find his Mathematical Reaſonings in full, my Deſign being only to take Notice of them ſo far as neceſſary, to make his Obſervations be received a little more favourably in the World, or at leaſt to ſuſpend condemning of him till we our ſelves have made more Obſervations to prove the contrary.

Monſieur *Amien*, Surgeon of the Hoſpital in *Flanders*, ſeems to confirm this ſame Opinion, by an Obſervation or Diſſection he made upon the Eye of one who died having a Cataract, which he told me he found to be the very Chriſtaline Humour it ſelf.

Monſieur *Maitre-jean*, after having examined whether the Chriſtaline be abſolutely

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lutely neceſſary to ſee, which by Experiments with the *Camera Obſcura*, it is not; as we have ſaid before, but only for the more perfect Sight, and that being allow'd, that a faint Image is painted without any Convex or Glaſs, by the hole in the *Camera Obſcura*; he ſhews that it will be much more perfect in an Eye where the Chriſtaline is beat down or put out of its Place, although never to ſee ſo perfect as with it; and makes uſe of that Obſervation, of thoſe who are Couched never to receive their Sight to ſuch Perfection as before, which is true, although I think ſome other Reaſons may be given for that, and which I ſhall take notice of more hereafter.

Thus then, as he ſays, the *Rays* being gathered together and refracted by the Convexity of the *Cornea*, makes the Image more perfect, and the *Rays* by this means being ſo much gathered as to croſs in the *Pupil*, go on their way, till in place of meeting with the Humour Chriſtaline (which he ſuppoſes to be beat down out of its Cavity of the Vitrious) meets with the ſaid Vitrious, whoſe Cavity he ſays becomes Convex, partly by the ſoftneſs of its Body, and partly by preſſure of the Chriſtaline on its ſide when out of its Place, ſo that it becomes almoſt as Convex as the Chriſtaline; the

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the *Rays* then meeting with the Convexity of the Vitrious are there the ſecond time Refracted, and brought nigher the Perpendicular or Axis of Viſion; although not to meet in a juſt Point as with the Chriſtaline, which is the Reaſon he alledges for their not ſeeing ſo well as formerly, nor can the ſoft *Medium* of the Vitrious make ſuch a ſtrong Refraction of the *Rays*.

He ſeems to have been at a great deal of Pains, both as to Theory and Obſervation, and anſwers moſt Things that may be advanced againſt him.

When he treats of the Nature of Cataracts, he divides them in ſo many Claſſes, curable, and incurable, but concludes, that they are all a Diſeaſe of the Chriſtaline, or Vitrious and Chriſtaline together; and adds the *Glaucoma*, commonly taken for a Diſeaſe of the Chriſtaline, is properly that of the Vitrious; nor does he deny the Cloudy or Viſcous Humour which hardens, ſo commonly called Cataract, but ſays, it is occaſioned by the Diſeaſe of the Chriſtaline that makes it to decay and diminiſh, altho' at the ſame time it ſeems to grow bigger, by means of that Muſilagenous or Glary Subſtance which grows about it; he calls this its Companion, or Appendix, and that the Chriſtaline and it are both Couched; the more fibrous, big, and old this Appendix is, the more Unſucceſsful, he ſays, the Operation

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ration will prove. To confirm this Opinion, he gives a wonderful many different Obſervations, both upon living and dead Bodies.

The Cataract begins, and is frequently accompanied with violent ſhooting Pains in the Bottom of the Orbit and Forehead, which ſeem to be ſomething of the Nature of Rheumatiſm.

The Humour falling upon the Eye, the Sight firſt begins to diminiſh in one or both; after which they are commonly troubled with thoſe *Muſcæ*, or Reſemblance of Hairs, Threads, Smoak, Clouds, Duſt or Cobwebs; and theſe ſeem to be in the Aqueous Humour, and not in the *Retina*, as I've ſaid more fully in my *Theory of Viſion*.

However neither of theſe are certain Signs of a Cataract; for the Sight may be diminiſhed by other Cauſes, or theſe Imaginations may ſometimes be in the *Retina*, although there is great Preſumption of Cataracts when both are together; and as the Suffuſion increaſes, ſo the Sight decreaſes.

There are many ſorts of Cataracts, which differ both in Colour and Quality, ſuch as the White, the Blue, the Pearl-colour, Aſh-colour, Green, Yellow, Black and Brown.

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All which Colours ſeem to proceed from the different Nature of the Humours.

The Cataract beſt eſteem'd for couching is the White Pearl Colour, or a little upon the Blueiſh, or the White that inclines ſomething to the Green, as likewiſe the Whitiſh Grey or Aſh-colour.

Thoſe which are perfectly White likewiſe ſucceed, but the Cataract frequently riſes up again after couch'd.

The Iron-colour'd or brown often ſucceeds well, although frequently ſtrongly adherent to the *Uvea*, which make them the more difficult to couch.

Thoſe that are clear, ſhining or Silver-colour'd are commonly falſe, as likewiſe thoſe that are very Yellow or Green.

As alſo the Black rarely ſucceed.

If the *Iris* ſeem to be any way faulty, or does not dilate or contract with Light or Darkneſs, it is a very bad Sign; or if the Globe of the Eye be either leſs or more than common.

If the Patient be ſubject to violent Pain in the Head, the Operation rarely ſucceeds well, eſpecially having been during the Growth of the Cataract, and ſtill continuing after it's come to be ripe.

Thoſe coming by Strokes, or any external Accident, are for the moſt part dangerous, and not to be meddled with.

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The younger the Patient is, if at a reasonable Age to undergo the Operation, the more successful it may be expected to prove.

There is as yet a sort of Cataract call'd *the Milky*; which I take to be nothing else but the White sort not come to its Maturity; for when it turns old, it proves to be the White, or Snowy-colour'd. This, if touch'd with the Needle before it be ripe, immediately mixes with the Aqueous, which makes it turbid all over, so that the Operator will scarce see the Point of the Needle.

The Matter seems to be contain'd in a Bag, or else betwixt the Christaline and its Coat, or *Tunica Aranea*.

Which when prick'd, or broke, as I've said, immediately mixes with the Aqueous.

There is as yet another sort of these that's older, although not altogether ripe, and seems as curdled when broke; before it be touch'd it looks to be uneven, as if made up of lighter and darker Parts, nor do they sometimes seem to be well join'd, so that the Patient often sees as through a Sieve, or other times as if through a Hole, which is sometimes in the middle.

When this sort of Curdly Cataract is touch'd, as I've said, it breaks all in pieces

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in the Aqueous Humour, but ſoon ſettles to the bottom, and the Sight proves clear.

Thoſe who have been couched of that ſort of Cataract, are ſometimes troubled with the ſeeing of *Muſcæ*, or black Spots, eſpecially upon violent or ſudden Motion of the Head; and that no doubt proceeds from ſome of thoſe ſmall Curdly Particles ariſing up again in the Aqueous Humour, which ſoon after ſettle as before, and are not then to be ſeen.

This ſeems evidently to prove things being ſeen in the Aqueous Humour, of which I have ſaid enough in the *Theory of Viſion.*

There is another very common ſort of Cataract, which may properly be called a Malign Suffuſion. Monſieur *Maitre-jean* ſuppoſes it to be an Abſceſs of the Chryſtaline Humour it ſelf; but whether it be or not, it commonly makes the whole Aqueous Humour turbid, the *Uvea* loſes its Contraction and Dilatation, the Colour of the *Iris* decays, and in a Word it's incurable.

When the Cataract is come to the full Ripeneſs or Maturity, and that it's of the true kind, the only Remedy then is the Needle; the ſight of Objects is now gone, but ſhadows of Light and Darkneſs they are ſtill ſenſible of; if otherwiſe, there is but

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but little hope of ſucceeding; the common ways of tryal is to ſhut the Eye, and rubbing it a little with the Finger, immediately open it to the Light, and obſerving the Pupil to contract it ſelf is a good ſign.

Although this Method is frequently uſed, yet I ſee no reaſon for rubbing; another way I think as good, ſuch as putting the Hand before the Eye, and ſuddenly taking it away, or putting the Patient in a darkiſh part of the Room, and bringing him nearer to the Window or Light, and the Pupil contracting as I've ſaid, is a good ſign.

By the Contraction and Dilatation of the Pupil, it may be judg'd that the Cataract has not affected the *Uvea*; as likewiſe, that the *Retina* or Optick Nerve does not ſuffer.

If the Pupil contracts but ſlowly, it's a token of its being old, and if of a very long continuance, the couching is very difficult, becauſe the Cataract is ſo harden'd, and faſt to the Parts all round about, that it's ſcarce to be looſened with the Needle.

If the *Uvea* have loſt its Contraction and Dilatation, it's a very bad ſign.

As the rugged and uneven Cataracts are not ſo good, ſo thoſe more ſmooth and even are beſt.

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But if very ſmooth and ſhining like poliſh'd Horn, it's likewiſe a bad ſign.

When aſſured of the Goodneſs of the Cataract, it's proper that the Patient be kept to a clean, ſpare, and light Diet before the Operation, as likewiſe the Uſe of gentle Lenitives or Glyſters, and Bleeding if Plethorick, ſo that the Body being in a good Temper, the Inflammation will be the leſs after Couching.

If the Patient be of a ſpare or thin Body, Bleeding and Purging is not ſo neceſſary.

The Months of *May* and *September* are reckon'd moſt proper for Couching, and rather to chuſe clear ſerene Weather than any elſe, as indeed is moſt proper for any Operation; it's true, our common Oculiſts neither obſerve Time nor Weather, or Bleeding, or Purging, although this is the regular way, nor needs Time be always obſerved if the Cataract be full ripe.

CHAP.

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CHAP. XXXIV.

The Manner of Operation for the Cataract.

AFTER having prepar'd the Body as aforeſaid, chuſe the Time of the Day, about Ten a Clock, and for the Place, let it be a Chamber of a good Light, although Sun-ſhine makes the Pupil contract it ſelf too much, and is too ſuddenly ſtrong for the Eye, when the Cataract is beat down; then two Chairs being plac'd, one for the Patient, another for the Operator, or a long Stool or Seat on which both may ſit, the Patient with his Face towards the Window or Light, (or rather a little obliquely) and the Operator with his Back to it.

The Eye that's well ought to be ty'd up, becauſe upon its Motion, or that of one Eye, the other generally does the like; then an Aſſiſtant having placed himſelf behind the Patient, let him put both Hands upon his Forehead, at the ſame time drawing the Skin and frontal Muſcles a little upwards, the Head may be turn'd a little backwards, leaning upon the Aſſiſtant's Breaſt.

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The Operator then is to ſit as near as his Knees will ſuffer him, and making the Patient turn his Eye towards the Noſe, put back the Upper-lid with your Finger, and the lower one with the Thumb, and at the ſame time keep the Globe of the Eye firm and ſteady.

And having choſe your Needle, of which ſome are of one form, and ſome of another, the round being what are frequently made uſe on, they ought to be about the bigneſs of a common ſowing Needle, for if too big they make too great a Wound, and cauſe too much Pain.

And if too ſmall they may readily break, but thoſe made uſe on by the beſt Practitioners are them a little flattiſh at the Point, and which I have more uſually made uſe on than the round ſort.

And having determin'd the Part you are to thruſt the Needle in, which is to be about a Shilling's breadth from the *Cornea*, that is in the white of the Eye and Middle, neither too high, nor too low, for if you paſs it in at the joining of the black and white, or *Cornea* and *Sclerotica*, it proves more Unſucceſsful, as likewiſe, that there is more difficulty in paſſing through that little Coronet or Inſertion of the *Uvea*, with the *Ligamentum Ciliare* and *Choroides*; having then thruſt the Needle in the Place afore-

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aforesaid, pass it athwart the Eye till such time as you see its Point appear betwixt the Pupil and Cataract, or advance it to two thirds of the Pupil, and raising its Point towards the upper Part of the Cataract, endeavour to work or beat it down to the lower part of the Pupil, that is, betwixt the *Uvea* and Vitrious, and waiting a little to see if it does not rise, you may then withdraw the Needle. *Let the Needle be well polish'd and warm.*

It may not be improper I here take notice of all the Parts the Needle passes thro', which is not what I have seen in any Author; having then gone through the *Tunica Conjunctiva*, and *Sclerotica*, the next it must necessarily pass through is the *Retina* and Vitrious, since they both go as far as that little Coronet before mentioned, or the Insertion of the *Ligamentum Ciliare* and *Uvea*, which is just at the joining of the *Cornea* and *Sclerotica*, the Needle then being a Line's breadth within this, must needs pass thro' the forementioned Parts, after which it must pass through the *Ligamentum Ciliare* before it can come into that space betwixt the *Uvea* and the Cataract.

The Operation being perform'd, you are to apply Raggs or Bolsters dipt in the white of an Egg, or Rose-water, on the Eye, or some make use of the white of an Egg beat up with a piece of Alome. And

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And having bound up the Eye (that is, both are to be kept ſhut) the Patient muſt be put in Bed, ordering him to lie on his Back, and his Head pretty high.

It is not to be open'd for Five, Ten, or Fifteen Days, according as the Inflammation continues, leſs or more, the white of an Egg is frequently changed as it grows dry.

He is to be kept quiet, to ſpeak little, not to eat things of hard Maſtication, but rather Spoon-meat; let him be kept to a ſpare Diet, and things of a clean and eaſie Digeſtion.

If the Inflammation ſhould prove violent, it will be very requiſite to Bleed and make uſe of Gliſters, or Lenitives.

And when the Eye comes to be open'd and well, let him take care of immediately running into the Wind, or Duſt, for fear of cauſing a new Inflammation or *Opthalmia*.

Sometimes the Needle happens upon one of the Blood Veſſels which are diſtributed in the *Uvea*, and will readily occaſion ſome Blood to mix with the Humour *Aqueous*, but that in time Precipitates, and rarely occaſions any Evil Accident.

CHAP.

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CHAP. XXXV.

Some particular Observations I made in Couching.

THE first I perform'd this Operation on, was a Country Woman, and having thrust my Needle into that Space betwixt the Cataract and the *Uvea*, I begun to move my Needle, and keeping too far off, I unluckily touched or wounded the *Uvea* with the Point, which immediately occasioned a drop or two of Blood to appear in the Aqueous Humour, after which I took more Care to keep close to the upper Part of the Cataract till such time I brought it down, Couch'd it, and performed my Operation successfully, although I found afterwards that I had so wounded the *Uvea* as to make the *Pupil* lose its round Figure, yet the Sight continued, although probably not so perfect as it might have been, had not this Accident happened; the drops of Blood precipitated to the bottom of the Aqueous Humour, and were no more to be seen, so that the Woman enjoys a tolerable good Sight.

Another young Woman about the Age of twenty Years being troubled with a Cataract

taract on each Eye, I undertook to Couch the Right which was full ripe, and having firſt endeavoured to looſe it from below, as ſome adviſe, (altho' I think a very wrong Practice) the Cataract immediately flew up, upon which the Patient cry'd out, I ſee your Face; but knowing that was not ſufficient, being got above in place of being below, and finding it adherent to the upper Part of the *Uvea*, I endeavour'd all that was poſſible to get it down, although I could not, and believe the great Reaſon was, that ſqueezing or preſſing the Globe with my Finger, in order as I thought to keep it more firm, I found I had forc'd out moſt of the Aqueous Humour at the Orifice, ſo that the *Uvea* and *Cornea* appear'd wrinkly. I then thought it was time to leave off, and withdrew my Needle, dreſs'd, and bound up her Eye.

I ſoon found the Eye again full as before, and the Cataract was juſt fallen down as formerly, having perfectly covered the Sight.

I then in a few Weeks there-after begun my Operation a-new, by forcing it down directly, which had the deſired Effect.

About a Year there-after, this ſame Woman came to me to have the other Eye Couch'd, which

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which I found to be uneven and rugged, or of the curdly Kind, and it ſeems was not full ripe; I nevertheleſs undertook the Operation, but found I had no ſooner touched it with my Needle when it broke, and mixt with the *Aqueous* Humour, which becoming drumly, the Patient could no way ſee; I then withdrew my Needle, and begun to doubt of the Succeſs, but I found in a Month's time all ſettled to the bottom, and her Sight become clear and well.

After this, an old Woman, who had been Blind with a Grey or Aſh-coloured Cataract for about Eighteen Years, came to me to have it Couched, which I undertook, and found, after I had introduced my Needle and begun to work upon the Cataract, it would in no way yield; it ſeemed to be almoſt as hard as Horn, and when I endeavoured more forcibly to Couch it, the whole *Uvea* ſeem'd to yield and give way along with it, ſo that I found it to be cloſe and ſtrongly adherent there, and by no means to be looſen'd or got down without tearing the *Uvea* to pieces, ſo that I thought fit to let it alone and withdrew my Needle.

The other Eye was Blind, of two Years ſtanding, the which I Couched without any difficulty.

After

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After this, I begun to understand the nature of Cataracts a little better, and willingly made choice only of those I thought would succeed; and although I have met with some other old ones that would not yield, yet I do not remember any other Evil Accident which has happened to me than what I have mentioned.

CHAP. XXXVI.

Of the Glaucoma, *or Disease of the Christaline Humour.*

IT'S certain, the Christaline is subject to Diseases, as well as the other Parts of the Eye or Body, especially Decay and preternatutal Bigness, both which commonly pass under the Name of *Glaucoma*, although not well distinguished by Authors; the first sort is commonly of a light Sky blue, or bright Sea Green: The Patient at first is troubled with something like Mist, Smoak, or Clouds before their Eyes, the Pupil keeps its former bigness, whereas in the other sort it enlarges, or the *Uvea* shrinks, by reason of the Bigness of the Christaline, and its advancing or forcing forward upon the said *Tunica*; in this case it is generally of a whiter Colour, which,

It sometimes turns to yellow or black.

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which, with the wideneſs of the Pupil, may eaſily be diſtinguiſhed from the former.

But in a word, either ſort being confirmed, cauſes a total Deprivation of Sight, nor is there any Remedy for one or t'other. *Oribaſius* tells us, *Glaucomata Omnia curationem non recipiunt.*



APPEN-

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APPENDIX.

OF THE

DISEASES

OF THE

EAR.

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APPENDIX.

OF THE

Diſeaſes of the Ear,

AND

Of the mutual Communications of ſome Diſeaſes in the EYE and EAR.

CHAP. I.

THE Reaſon I here take Notice of the Diſeaſes of the *Ear* is, becauſe of the mutual Communications of ſome Diſeaſes of the ſaid Organs of Sight and Hearing; eſpecially in ſuch as *Ophthalmia Vera*, or

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the Diſeaſes which affect the *Pericranium* or *Dura Mater*, both being continued to the two foreſaid Organs; for the firſt is continued to the *Tunica Adnata*, or *Conjunctiva*, commonly called the White of the *Eye*; this *Membrane* being the ſeat or chief Part affected in *Ophthalmia*: And according to the degrees of this Diſeaſe, the *Pericranium* ſeems to be more or leſs affected; it is likewiſe to be obſerved, that this ſame *Membrane Pericranium* is continued to the * *Tympanum*, as likewiſe by the *Sutures* of the *Cranium* to the *Dura Mater*, and the ſame *Dura Mater* covers and enters in with the Auditory Nerve at the Hole of the Internal Proceſs of the *Os petroſum*, where ſome part of it, eſpecially that of the *Portio Mollis*, expands it ſelf, or is continued to that delicate fine *Membrane* which lines the Cavities of the foreſaid Bone of the *Ear*, and this ſame *Membrane* to the inner-ſide of the *Tympanum*. As I have ſaid, the *Dura Mater* is continued through the *Sutures* to the *Pericranium*; and the ſecond Pair of Nerves having left their *Origine* or *Corpora Striata*, and *Thalami Nervorum Opticorum* in the Brain, at their paſſing out at the foremoſt Hole of the *Os ſphænoïdes*, receive their External Coat from the *Dura Mater*, which is continued

* *That is, by the* Meatus Auditorius *to the outer-ſide of the* Membrana Tympani.

tinued or makes up the *Tunica Sclerotica* of the *Eye.*

It is no wonder then of the Sympathy betwixt theſe two Organs, eſpecially where either of thoſe two *Membranes* are very conſiderably affected, and what I have frequently and for the moſt part taken Notice on, in thoſe troubled with an *Ophthalmia Vera*, eſpecially upon the uſe of Repellents or cooling Medicines to the *Eyes*, or Forehead, has forced the Humour backwards to the *Ear*, and occaſioned a dulneſs of Hearing, and upon its growing better has immediately again returned to the *Eye.*

This I have frequently obſerv'd in theſe inveterate *Ophthalmia's*, and have known but few of a very long ſtanding, where the Patient has not at ſome times been troubled with a dulneſs of Hearing during his illneſs of this Diſeaſe. It may likewiſe be obſerved that in this eſpecially, or the Diſeaſes of the ſaid *Membranes*, the ſame Univerſals are equally proper for both.

The Extenſions of the *Pia Mater* to thoſe two Organs might likewiſe be conſidered, as it gives the internal Coat to thoſe two, as well as the reſt of the Nerves, and enters into the Bones of the *Ear*, as well as

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to the *Eye*, where it makes up or is continued with the *Tunica Choroides*.

I doubt not, ſomething might be ſaid of the Membranes of Smelling and Taſting, but Defluxions ſeem more ſenſible to the Hearing.

It's true, it may be alledged that the *Dura* and *Pia Mater* are continued with the Nerves to all the Parts of the Body; but when we conſider the particular *Membranes* I have named, (they make up) in them two Organs, and the Contiguouſneſs or Nearneſs of the Parts, it will no way ſeem ſtrange, although it be not what I have ſeen taken Notice of by any Author.

Thus then having conſidered the Reaſons for ſome Sympathy or Communication betwixt ſome of the Diſeaſes of thoſe two Organs; I ſhall in the next place take notice of the Maladies incident to the *Ear*, with their Cure.

Nor would I trouble my Reader with a long Deſcription of thoſe Parts, ſince I could ſay but little elſe than what has been ſaid upon that Subject already, and ſo very well deſcribed by *Skillhammaer*, *Duverney*, and *Valſalvo*; I ſhall only take notice that I could never ſee the *Veſtibulum* full of *Mucus*, as the latter pretends, excepting in Infants of a few Months old, where all the Cavities ſeem to be full.

CHAP.

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CHAP. II.

Inflammation of the Membrane of the Meatus Auditorius.

THIS Membrane is very Nervous, and consequently subject to cause violent Pains and Dolor; this is readily occasioned by Obstructions of the Glands and Blood Vessels, distributed in those Parts, either by External or Internal Causes.

This Membrane extends it self upon the boney Part of the *Meatus Auditorius*, and seems to join the *Pericranium*; the Remedies most proper in Inflammations of this Membrane, are such as Injections made up of Women's Milk, *Ol: Amigd: Amar:* and White of Egg, at the same time Bleeding is very proper, and gentle Catharticks; but if these should not give Ease, but that it tends to Impostumate or Supurate, it must be treated as hereafter, in the mean time it may be observed, that these things are very proper in *Opthalmia's* likewise.

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CHAP. III.

Of Dolor in the Ear by Cold.

WHEN the Diſeaſe proceeds from Cold, the aforeſaid Univerſals are alſo proper, and ventoſing is ſometimes of great Uſe; however, as to the local Remedies, it will be more proper to inſtil into the *Ear*, Oil of *Rue*, *Lillies*, and *Euphorbium*, or if mixt with a little Spirit of Wine, ſtopping the *Meatus* with a little Wool, and hot things may be applied Externally. It may be obſerved, that *Cucuphas* for the head of Herbs and *Aromatics*, are very proper here, as alſo in *Opthalmia's*, not forgetting Bathing and Sweating which is very uſeful in both.

CHAP. IV.

Of Impoſtumation or Tumours of the Ear.

THESE are very dangerous, oftentimes occaſioning a violent Fever, Swoonings, *Dilirium*, and ſometimes Death, before it come to Supuration; the beſt way is to bring it as ſoon to Maturity as poſſible by the Uſe of Cataplaſms and Poulteſſes, ſuch as that made up with *Farina Fabarum*, *Lillie-roots*, *Unguent. de Althea*,

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Althea, and Oil of *Chamomile*, to be applied warm to the external Ear; and let be dropt into the Ear, Oil of *Roſes* and *Myrtil*. The Reaſon of the violent Pain, as I have ſaid, is occaſioned by the Nervouſneſs of that Membrane, and probably the more dangerous by reaſon of the nearneſs of thoſe Parts to the Brain.

CHAP. V.

Of the Ulcers in the Ears.

THESE are a Solution of Continuity in the *Meatus*, occaſioned by the opening of an Impoſtumation, or ſome ſharp coroding Humour there; it generally renders fœtid or purulent Matter, and is accompanied with Dolor, and ſometimes Fever, or other ill Symptoms; it may be known by the aforeſaid Matter iſſuing out, or oftentimes a bloody ſort of *Ichor*. As to the Remedy, make uſe of warm Injections made with Honey of Roſes, White Wine, and Barley-water, and there-after let be dropt into the Ear Oil of Leeks, or Juice of Onions, with Honey, and a little Oil of Turpentine. Some inject with the Urin of a young Child; the *Aquæ fallopii* or *Phagedenick* Water with Honey is likewiſe of good Uſe, and for Cicatriſing, ſome make uſe of Nut-Galls ſteep'd in Red Wine, with a little Honey.

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CHAP. VI.

Of Worms in the Ears.

THERE are ſometimes Worms or Sheep-lice in the Ear, for which the Tincture of Myrrhe and Aloes being dropt into it, rarely fails, or Brandy; as alſo the uſe of bitter Oils, or Juices, as that of Wormwood, Centaury or Colocynth, or Gall of an Ox with Wine or Vinegar, or Aloes diſſolv'd with Urine. Theſe either kill Worms or Inſects, whether bred there, or got in by Accident.

CHAP. VII.

Of Dulneſs of Hearing occaſion'd by Stoppage or Swelling of the Aqueduct, or Ductus Falopianus.

THIS Conduit comes from the Barrel, and opens behind the *Uvulla*; if it be ſtopt, it occaſions a Dullneſs of Hearing, which frequently happens upon catching cold, as when the Glands and Membrane of the Noſe is ſwell'd; it at the ſame time affects the Membrane of the Palate, and that of this Duct, which by ſwel-

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ſwelling hinders the Air from paſſing in ſo freely that way to the *Tympanum*; and that being abſolutely neceſſary, its Obſtruction occaſions that Dullneſs of Hearing. This is evident; for by gaping very wide, or yauning, the Duct opens, and the Air gets in more freely; at which time the Ear ſeems to give a ſudden Crack, and for a little while ſhall hear better. This may be cured by the uſe of Errhines for the Noſe, Fumigations and Sweating. Mr. *Borhave*, Profeſſor in the Univerſity of *Leyden*, ſays, he cured a Dullneſs of Hearing cauſed by an Obſtruction of this Duct by Means of a Gargle, which may very well be; it's certain that Maſticatories here are likewiſe of very good uſe.

CHAP. VIII.

Of the Wax hardned in the Meatus Auditorius.

THIS Diſeaſe happens frequently, and is one of the eaſieſt cured. It may either be taken out by a ſmall Inſtrument made on purpoſe, or by the uſe of Injections, with a Leaf of Tobacco boil'd or ſteept in Water and White Whine, with

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a little Oil of bitter Almonds, or plain warm Water, or mixt with a little Milk to make it more ſoft. *Bartholin* tells us of ſmall Stones or Gravel coming out of his Wife's Ear. My very good Friend Mr. *Hunter* having ſyringed a Gentleman's Ear, who had been troubled with a Dullneſs of Hearing for near two Years, brought away Abundance of hard Wax, in which there was a ſmall *Cochlea*, or Snail's Shell, which ſeem'd to fill up the *Meatus*; but how it came there is the Queſtion. My Friend ſtill keeps the Shell. I'm of Opinion it might enter there while very ſmall, either by being in the Water, or otherwiſe; and when there, it might augment and grow bigger by the Warmth, as other Worms which are hatch'd in the Body.

CHAP. IX.

Of the extraordinary Extenſion and Relaxation of the Membrana Tympani.

THE firſt is probably occaſion'd by an Inflammation of that Membrane, and may be treated much in the ſame Manner as I've ſaid before in the *Meatus Auditorius*. The Relaxation is readily cauſed by a cold and

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and moiſt Humour; and things hot and dry are to be uſed, as Spirit of Wine dropt in the Ear, or Brandy; as alſo a little Cotton wrapt round a Clove, and ſtopt in the Ear, and the uſe of Fumigatories, Sweating, Cupping and *Cucuphas.*

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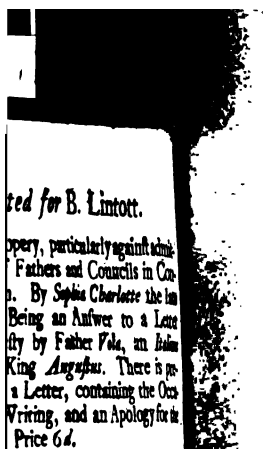
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